

# IMPROVING THE EFFICIENCY AND QUALITY OF HELP SEEKING AND HELP GIVING FOR PROGRAMMING TUTORIALS

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## Preface

The first person I would like to thank and give credit is Aron van Harten, the master mind behind TA-HelpMe. I am so grateful that you allowed me to tinker with your web application and that you spend all those hours working with and for me to finish the prototype on time. It was a real pleasure working with you and I think it is awesome that you are going to do more research to improve TA-HelpMe even further. Then I would like to express my gratitude to my advisors Angelika Mader and Ingrid Breyermann, for all the feedback, patience and understanding. For all the times you were the rubber ducky with whom I could share my ideas. And especially thanks for the support and guidance. I would also like to thank Dennis Reidsma. First thank you for your guidance in the ethical committee debacle. But more importantly thank you for being the second committee member and taking an interest in this research. Then I would like to give credit to all the people who took the time to be interviewed and shared with me their experiences and struggles. Your contribution made the design solution a true human centered design.

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## Abstract

**Background:** Little research is done in the field of help seeking during tutorials by means of a Technology Enhanced Learning tool. There are a lot of studies that study help seeking in general. Likewise there are studies that researched the effect of online help seeking. However, the combination of face to face tutorials combined with a tool to improve help seeking is not yet explored.

The level of the question is a factor that influences the quality of help seeking [1]–[5]. Moreover, when the perceived threat to self-worth that is associated with asking questions in public is reduced it increases help seeking behavior [6]–[10]. Further, several studies found that sharing questions and strategies improve future help seeking of students [1], [11], [12].

Studies that researched the effect of online help seeking on discussion forms concluded that moderating a discussion form takes a lot of time from the teaching staff. Furthermore, providing a discussion board on it self does not improve the learning of students [13], [14]. For online help giving to be successful the teaching staff needs to play a big role moderating the discussions [14], [15].

Most educations use the technique of letting students raise their hand when they have a question. This technique is vastly out dated and even worse inefficient. While students wait for help, they stagnate their work and focus on getting the attention of the help provider. Especially during programming tutorials this is a problem. Typing with one hand is extremely inefficient and most students do not even try to proceed while they wait for help. Because the students are already programming on their own laptop this brings the opportunity to design a solution for the hand raising problem that involves high technology. When education is supported by technological tools, it is called technology enhanced learning (TEL).

**Objective:** This research's objective is to find how technology enhanced learning can improve the quality and efficiency of help seeking and help giving for programming tutorials.

**Design:** At the University of Twente several programming courses already used a web-application called TA-HelpMe to solve the hand raising problem. During this research that tool was expanded to become a TEL tool.

Firstly, the tool was expanded with categories. When students wanted to request help they had to specify the category of that help. Hypotheses: By selecting the category of their help request, students will take more time to think about what kind of help they need, resulting in an improvement in the quality of help seeking. Further, by reading the category before going to the help request the teaching staff can

prepare for the help request, this leads to a higher level of help. Also, by distributing the experience over the categories, the teaching staff can increase the self reported efficiency of help.

Secondly, the students had to enter their question, by writing their own or picking a previously asked question. By letting students type out their question an attempt was made to improve the quality of help seeking. Moreover, letting students read the questions other students asked at the same category was expected to help students formulate better questions themselves.

Lastly, a group-help feature was designed. With the feature the supporting staff could ask students who had the same question to come to the front to be helped simultaneously. This was expected to improve the efficiency of the help giving.

**Methods:** The tool was then evaluated using quantitative data to measure the quality of the help seeking and the acceptance of the tool. Qualitative interviews were used to evaluate if the tool improved the efficiency and quality of the help seeking and giving according to the Teaching Assistants (TAs) of programming tutorials.

**Findings:** By adding steps to the help seeking, the amount of improvident help seeking was reduced. The categories were perceived as useful. Adding categories to the questions and sign off entries, offered the TAs the opportunity to select what topics they would help. The TAs stated that the categories helped them to spread the attention of the TAs more effectively. When TAs lacked knowledge on a specific topic they could ask another TA to take on questions with that category. However, the typing out of the question did not increase the amount of specific questions that were asked. During the tutorials the TAs did not guide the students to ask better questions, the guidance of the question entry was not intuitively adapted by the TAs.

**Interpretation:** Adding categories does increase the efficiency of help seeking, especially of the help giving. Moreover, the categories helped improve the quality of the help giving. Typing out the question on itself does not improve the quality of the help seeking. The TA-HelpMe tool was seen as an improvement of the tutorials by the majority of the students and TAs. Using technology enhanced learning tools can improve the efficiency of help seeking and giving for programming tutorials.

**Possible applications:** In this research the TA-HelpMe tool was evaluated for programming tutorials specifically. Future research could evaluate how the effects on help giving and receiving with this tool are for other fields of study. This research set the first steps in the combination of TEL tools and tutorials. More research could be

done to evaluate how TEL tools could increase the quality of question asking during tutorials.

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# Introduction

There are several educational activities that universities use to teach students subjects. For instance lectures, lab sessions, and tutorials. This research focuses on the last educational activity, tutorials. Specifically programming tutorials, in these tutorials the students learn to apply a programming language to solve exercises or to build a project. Most programming courses provide a manual with the exercises, during the tutorials the students are expected to work on these exercises and ask for help when they are stuck or if they want to sign off exercises. The students signal the teaching assistant (TA) by raising their hand, the TA decides who will be helped next, and students wait until the TA has come to them. While waiting the students often keep an eye on the TAs to ensure that they will be helped when it is their turn. If the waiting takes a while, the students switch the hand they raise or ask their classmate to take over the hand raising. During this waiting time the students are less productive, they are watching the TA in order to not miss their turn, they pause their work to wait for help, and some students attempt to continue working on their exercises with one hand raised. However, typing with one hand is inefficient and these students might miss their turn when the TA is done helping someone else. One time there was a student who made a cardboard hand to raise, so he did not have a sore arm at the end of the tutorial. The inefficiency and frustrations that students perceive while raising their hand to seek help is called the hand raising problem in this research. Tutorials are an important learn activity, that allows students to put theory to practice, while receiving guidance from supporting staff. Letting students raise their hand when they have a question is one of the oldest help seeking behaviors known. But doing something a certain way, because it was always done this way is not per definition the best option. In this research a way to improve tutorials is sought. Focusing on improving the efficiency and quality of help seeking and help giving behavior.

## 1.1 Hand raising problem

When a student raises their hand it is called help-seeking behavior [16]. Some students will become passive when they need help, others will become active and are determined to overcome the obstacle [16]. Seeking-help is a strong cognitive strategy that increases the resilience of a student [16]. Students that have more intrinsic motivation are more likely to seek help when they are stuck [16]. However, waiting for help with your hand raised creates two problems; the waiting agitates the students, and the students are unable to continue to work while their hand is raised.

### Agitation

Letting pupils raise their hand when they have a question creates "waiter behavior" for the supporting staff. Where the student is the guest and the teacher is the waiter [17]. When a student is waiting for help they get frustrated when they have to wait a long time or if someone else (who raised their hand later) is helped before them [17]. A way to get rid of raised hands is by walking a structured round through the room and letting the students know they get help when you have reached them, by giving clarity the students they will not ask for attention when they want it, but when the teacher is at their table.

### Inability to continue

When a student is waiting with their hand raised, they miss a hand to work with and they are focused on getting help. These factors hinder the student to work on their assignments. The longer the students needs to wait the more frustrated they will get. Sometimes the student is unable to continue with their assignments, because they need help to complete the assignment they are doing at the moment and the next assignments are build upon the answer of this assignment. In that case the student can only wait until their help request is satisfied. Most of the time the student is able to work on other questions or try to solve the question while they wait for help.

The hand raising problem is is more visible in large classrooms with many students, and when students are all working on the same set of problems as can be seen during a lab session. In smaller classrooms the supporting staff is able to help all the raised hands on short notice and problems are less noticeable.

#### 1.1.1 Tutorials

Tutorials are self regulated learning activities. This means that the students are responsible for their own learning pace. In Dutch preschools a dice is used to structure

help seeking during self regulated learning. The dice contains several colors and a question mark, the pupils can roll the dice to the color of their preference and notify the people surrounding them; if they need help, if they want to help others, or if they do not want to be disturbed. This is a low technology (low tech) example of a solution to the hand raising problem. The dice is low tech because it is designed as simple as possible and does not contain any technology. Considering tutorials and the hand raising problem there are several methods that have been tried to solve it. For instance using the white board of the classroom, students could write down their name on the white board when they sought help. Another example is using online sheets where students could select a time slot to reserve time from the TA. During programming tutorials students all use their own laptop, this brings the opportunity to use these laptops for high technology (high tech) solutions. Because this research was done for Human Media Interaction (HMI) the solution will be a high tech solution. However, to understand and learn from existing educational tools low tech solutions will be also taken into account. Existing high tech and low tech solutions are discussed in section 3.4.

### **Programming tutorials**

Programming tutorials involve students working on a laptop or computer in a software environment to solve assignments or work on a project. At the University of Twente the programming tutorials are always supervised by teaching assistants (TAs) and at some courses the teacher is also present to supervise the tutorials. Because the students use their laptop during the tutorials this learning activity lends itself for software that supports the learning activity.

### **Stakeholders of tutorials**

During tutorials students make exercises and seek help when they get stuck. Sources for help are; other students, internet, the course theory, and teaching staff. Teachers and teaching assistants (TAs) are seen as the teaching staff of a tutorial. For these stakeholders a stakeholder analysis was done, the results can be found in chapter 3.

### **Quality of help seeking**

The teaching staff of tutorials mentioned that students of programming courses have a hard time formulating their questions. The most common help seeking requests consisted of "I don't understand it." or "My code does not work.". The teaching staff mentioned that they would like the students to be more prepared, and to ask better

questions when they seek for help. Webb et al. [1], made three categories to distinguish the levels of help seeking; specific questions, general questions and making errors. They also discovered that only the students who asked specific questions benefited from high level help. The teachers of the programming courses mentioned that they believed that the inexperience with the new programming vocabulary impeded students to ask questions, because they simply did not know which words to use to ask the question. Several studies endorse this assumption and recommend the sharing of questions to resolve the language barrier [1], [12].

## 1.1.2 Technology Enhanced Learning

TEL tools are software tools that support educational activities. In the help-seeking and giving field there are a number of computer tutor systems that replace the human TA by giving the advice and tips in a TEL tool. The replacement of a human tutor makes the students responsible for monitoring their own performance and infer to their own learning needs. These are skills that many students have not yet mastered, because they never learned how to be the owner of their own learning process. Furthermore, the computer tutors take a lot of time to be build and are not flexible when unexpected questions are asked. In this research the human tutor will be present, the flexibility of the TA to answer unexpected questions and to monitor if students who are shy meet their learning needs is a quality that cannot be replaced by a computer. A TEL solution could help the students and TAs improve the quality and efficiency of the help seeking and giving.

### Designing a solution

Technology enhanced learning and theory about help seeking and help giving could be combined to design a solution for the hand raising problem. In order to provide a solution that fits the users best, this research will be human centered. In section 2.4 the process of human centered design is discussed.

## 1.1.3 Research questions

Now that the problem is known and the type of solution is known the research question can be described:

**How can technology enhanced learning improve the efficiency and quality of help seeking and giving for programming tutorials?**

To see what works best for programming tutorials the existing solutions need to be evaluated to fit the user needs. This leads to the first sub-question;

**What are the pitfalls of programming tutorials for each user group?** One of the expected issues is the hand raising problem, but to make sure that the solution fits all the user needs, the users will be interviewed. The method of interviewing will be discussed in 3.1.1 and the results in section 3.2.1.

Next to the user needs the influencing factors on help seeking and help giving need to be investigated. Especially the factors that influence the efficiency of help seeking and help giving. This leads to the second sub-question;

**What factors influence the efficiency and quality help seeking?** Educational research about help seeking is discussed in section 2.1, the results of expert interviews are shown in 3.2.1, and the design chooses that combine these insights can be found in section 3.7.2.

As was mentioned before the existing solutions are discussed in section 3.4. This section answers the sub-question;

**What technologies are available?** The available technologies are evaluated on criteria that combine educational foundations with the user needs. At the end of chapter 3.4 the tool for the design solution and the substantiation for that choice are explained.

In chapter 4 the methods for the user analysis and the tool evaluation are discussed. The results of these methods can be found in chapter 5, and the conclusions of this research can be found in chapter 6. Finally, the discussion about the research and the future recommendations can be found if chapter 7.

## 1.2 Overview of the research questions

To give a quick overview of the research question and the sub-questions they will be summarized below. The enumeration of the sub-questions will be used to reference to the sub-questions throughout the rest of the report.

Main research question (MRQ):

**MRQ: How can technology enhanced learning improve the efficiency and quality of help seeking and giving for programming tutorials?**

Sub-research-questions (RQs):

1. RQ1: What are the pitfalls of programming tutorials for each user group?
2. RQ2: What is the effect of a tutorial as learning activity?
3. RQ3: What factors influence the efficiency and quality help seeking?
4. RQ4: What technologies are available to improve tutorials?
5. RQ5: How can the available technologies be used to create a TEL solution that fits the user needs and the MRQ?
6. RQ6: What is the user acceptability of the design solution?
7. RQ7: Did the design solution improve the efficiency and quality of help seeking and giving for programming tutorials?
8. RQ8: What are the recommendations for future TEL tools that try to improve help seeking and giving?



# Literature Review

This chapter contains related research and explains previous literature on the topics that influenced the design solution. The first section provides a broader perspective about tutorials as education activity. Discussing in the that section several visions on learning via practicing and experimenting. The second section offers information help seeking and help giving. What are the processes of help seeking and giving, and what factors influence the quality and efficiency. Followed by a section about Technology Enhanced Learning (TEL) and a section that discusses human centered design. TEL design and HCD are the design techniques that were used in this research. Finally, the final section that summarizes the conclusions of this chapter.

**Research questions** This chapter answers RQ2 and RQ3. In section 2.1.1 the answer to RQ2 is given. Section 2.2.3 gives the answer to RQ3.

RQ2: What is the effect of a tutorial as learning activity?

RQ3: What factors influence the efficiency and quality help seeking?

## 2.1 Tutorials as learning activity

As was mentioned in the introduction a tutorial is a self regulated learning activity, where the students are responsible for their own work pace and learning experience. According to the Vrije Universiteit Amsterdam a tutorial is a meeting where students are actively working on the subject matter under supervision of one or more students [18]. Actively working matches the "active experimentation phase" of the learning cycle of Kolb, it involves applying abstract principles and theories in reality [19]. The learning cycle can be found in figure 2.1.

**Kolb's learning cycle** Kolb views learning as a cycle of four phases. Ideally the learner goes through the cycle beginning in the concrete experience, they then con-

tinue to the reflective observation, from there they start the abstract conceptualization, and end in the active experimentation [20]. However, the arrows in the overview already show that the cycle can be walked in multiple ways. Kolb associated four learning styles with the cycle of learning. The learning styles of Kolb can be seen in the center of the circle. The learning styles can be matched to several character descriptions. Divergers are the dreamers, assimilators are the thinkers, convergers make the decisions, and accommodators are the doers. Kolb adopted the assimilation and accommodation learning styles from Piaget, and the other two from Hudson [20].

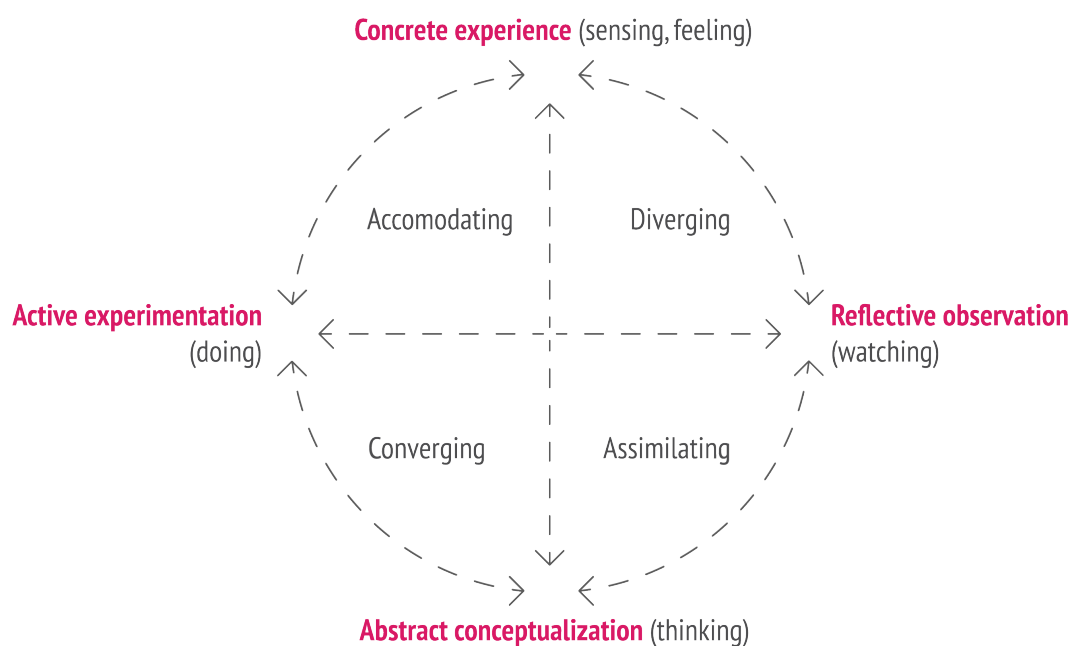


Figure 2.1: The learning cycle of Kolb

**Skilled learning** During a tutorial several of the learning skills of "skilled learning" are practiced. Sylvia Downs is the founder of skilled learning [20]. According to Downs skilled learners are able to estimate what needs to be learned and which learning style is suited to the available means and their own preferences [20]. Skills that are necessary for learners according to Downs are:

1. observing
2. listening
3. translating words and diagrams
4. asking questions
5. remembering

6. experimenting and practicing
7. criticize
8. identification and correction of mistakes

Depending on the exercises in the manual all of these skills can be practiced during a tutorial. The goal of a tutorial is to experiment and practice with the material of the course.

**Blooms taxonomy** The experimenting and practicing of tutorials can also be found in the application category of cognitive thinking. Bloom developed a taxonomy that includes six main categories of cognitive thinking. The cognitive domain contains the skill to gather and apply information in a meaningful way [21]. In figure 2.2 the categories are represented as a staircase with the definition of each category to the right of each step.

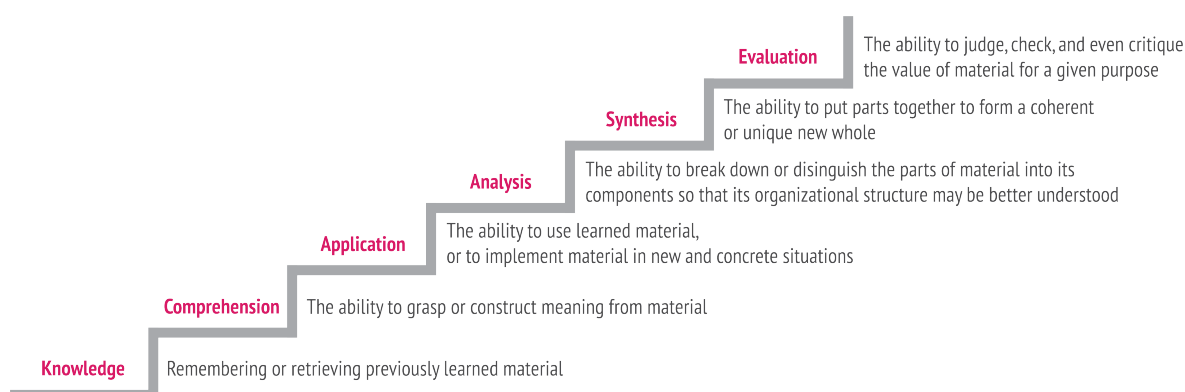


Figure 2.2: A visual representation of Blooms taxonomy

After forty years the taxonomy was revised by Anderson and Sosniak [20]. Leslie Owen Wilson made a graphical representation of the main changes, see figure 2.3. The evaluation changed in level and the new taxonomy uses verbs instead of nouns to represent the levels [22].

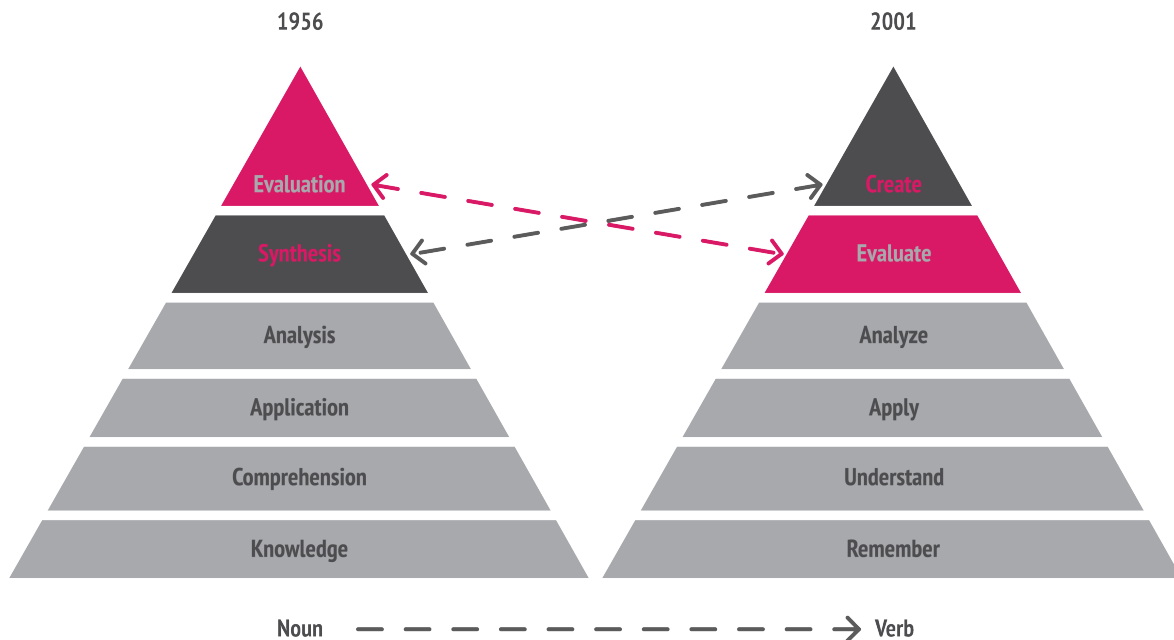


Figure 2.3: A visual representation and summary of the revised version of Blooms taxonomy [22]

### 2.1.1 The effect of a tutorial as learning activity

To answer RQ2. The effect of a tutorial as learning activity is the ability of students to practice and experiment with the subject matter under supervision. This learning activity allows the students to ask for help from meaningful resources, such as peers and teaching staff, when they are stuck or they want to learn something.

To answer the leading question of this section. What is learning? Learning is a cyclic process where the learner users several skills and resources to adopt new information or skills.

## 2.2 Help seeking and help giving

Wilbert McKeachie mentions in the foreword of the book "Help seeking in academic settings" that he taught learning skills to students for years, but never thought about the help seeking skill [6]. However, Sylvia Downs added asking questions in the skill set of skilled learners [23]. Up until the 1980's help seeking was though of as a sign of weakness instead of a learning strategy.

Help seeking is not just raising a hand and asking for help. Help seeking is a metacognitive skill [24]. Metacognition is often referred to as "thinking about thinking", it is the skill to recognize if a cognitive goal was met [25]. During tutorials the students need to be able to use this metacognitive skill to evaluate if they are able to complete the exercises and when they need to seek help to meet their goals. In the next sections the help seeking and giving processes will be discussed in depth. In section 2.2.3 the factors that influence the quality and efficiency of help seeking and giving are summarized.

### 2.2.1 Help seeking

**Process of help seeking** Help seeking is the skill where the learner turns to a teacher, classmate, friends, or parents for help [6]. It is the skill to seek help at the appropriate time from appropriate resources [24]. Karabenick mentions that although help seeking is an important learning strategy there are forms of help seeking that are less desirable [6]. For instance when students only ask general questions or ask help to solve an error [1]. Another less desirable form of help seeking can be seen when a student requests help, but does not know what they want to ask. Cultural beliefs and personal views on help seeking can have a negative effect on help seeking. A disadvantage of help seeking is that it can threaten the self-worth of the learner, because they think help seeking implies inadequacy [7] [8]. Another disadvantage is the public attention the help seeker gets, this is especially off-putting for the self-conscious learner [9]. Moreover, Shapiro mentioned that the feeling of being judged less capable by the person you asked for help could be embarrassing for the learner [10]. Students' intention to seek needed help depends on how they perceive the classroom achievement goal structure and their personal achievement goal orientations [6]. The likelihood of seeking help can be increased by reducing the perceived costs that are induced when learners are concerned that they perform worse than others in the class [6].

Newman used the term adaptive help seeking in several papers [6]. Adaptive help seeking consists of three critical decisions [6]:

1. Necessity: is it necessary to ask someone for help?
2. Content: What question should I ask?
3. Target: Whom should I ask for help?

The first decision necessity is restricted to occasions when the learner needs assistance. Needing assistance can occur when the learner lacks the knowledge or their comprehension of the task is insufficient [26].

Aleven and Mercier made models that include the three critical decisions of Newman. In figure 2.4, the two models can be seen. The models describe the process of help seeking. Students start at the bottom, they become aware that they are at an impasse and that they need help. Mercier uses two steps for this necessity decision, namely recognizing and diagnosing the impasse. The second step includes the cause of the impasse in terms of knowledge [27]. Then the students need to seek help. This can be done by asking a peer, searching online or in the subject theory, using an online tutor, or asking teaching staff for help. The Mercier model was made for a computer coach [27], while the Aleven model is focussed on traditional help seeking. With the step "Establish a specific need for help" Mercier means to establish in terms of topics and types of help, what help is needed from the computer coach [27]. A step that the Aleven model misses is the comprehension of the help. Mercier designed this step as the step where the help that was given is discussed, a mental model of the given information is made linking the given information to prior knowledge.

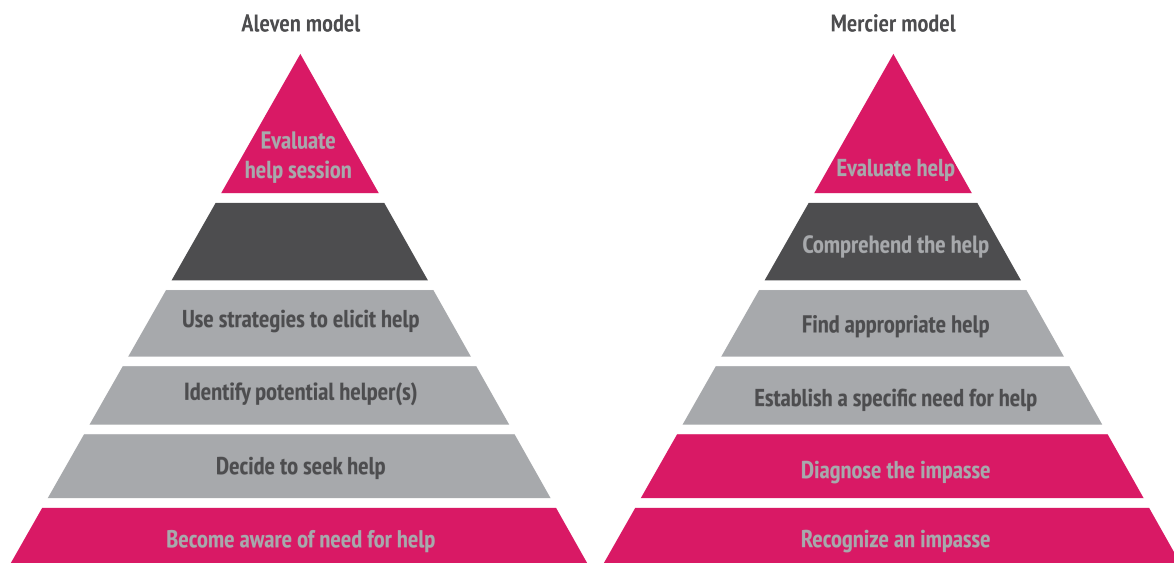


Figure 2.4: The models of Aleven and Mercier compared [27]

**Quality of help seeking** Once students have decided they need help, they need to decide whether to seek help, and who they want help from [6], [28]. Karabenick researched together with Knapp the relationship between the amount of help seeking and the level of help the students needed. Their results indicated that the need for help was not a direct function of the reported help seeking of students [6]. Help seeking is a meta-cognitive skill that has to be trained and stimulated [24]. It is often seen that individuals do not seek help effectively [4] or that the learners avoid seeking help altogether [29].

When students seek help there are a couple of categories for which they can ask help:

- specific questions (how to solve the problem),
- general questions (general statements of confusion),
- and making errors.

Webb et al., discovered that students asked on average more general questions and sought help when they had an error, than asking help with specific questions [1]. Asking specific questions however related positively to achieving the goal, and students who asked more specific questions obtained higher test results [1]–[5]. Asking general questions and seeking help with errors were not statistically related to higher test results [1]. Students who asked specific questions benefited more from high level help than students who asked general questions and received high level help [1]. Moreover, students who asked general questions received less high level help and carried out less high level follow up activities after receiving help [1]. Students who ask general questions usually show that they do not know how to start solving the problem or that they do not know what they should do and state that repeatedly [1]. General questions do not help the help giver define where the help seeker is stuck. For instance when a help seeker says "I don't get it." or "How do you do it" this does not provide clues for the help giver on what the help seeker does not understand [1]. While the specific questions generated targeted explanations [1]. Encouraging all students to explain their interpretations of problems and their problem-solving strategies, and to listen to each other, may help help seekers to clarify their own thinking to get targeted explanations from help givers [1], [12].

Van der Meij found that children with relatively poor vocabularies asked significantly more unnecessary questions than children with good vocabularies [11]. When students are new to programming they have to learn a new "language". In the beginning their lacking in vocabulary may lead to asking more general questions. Sharing questions and strategies may help the students who have trouble asking specific questions to learn how to formulate their question better and understand their problem better. Eventually the students will become ready to receive a higher level of help that will help them grow.

The quality of help seeking increases if the help will be remembered longer. A technique to remember instructions longer is activating the prior knowledge of the students [30]. By engaging the prior knowledge the brain associates the new information with the prior knowledge and is better able to store the new information. This results in the students remembering the new information longer.

**Efficiency of help seeking** In the disadvantages of help seeking that were mentioned earlier the prejudices of seeking help were discussed. Students could think that seeking for help is a weakness. Also disliking the public attention of asking a question, can be a reason for students to put off the asking for help. Karabenick stated that when the perceived costs of performing less than peers can be reduced that this would result in more help seeking behavior [6]. Kitsantas researched the perceived threats and preferences of students concerning help seeking strategies. In her research Kitsantas found that students prefer to ask for help via electronic means [31]. When Karabenick and Knapp split one tutorial session into two groups, where one group was supported by TAs and the other by computer-based help, the results showed that 86% of the group that had computer-based support sought help. Meanwhile, the human supported had a percentage of 36% that showed help seeking behavior [6]. The researchers concluded that the students who could ask for help on the computer had the "freedom to fail" these students did not suffer the fear of performing less than peers and sought more help [6]. Likewise, Kitsantas found that electronic asynchronous means of help seeking present less of a threat to the self-esteem of students than face-to face of other real time interaction [31]. Kitsantas further concluded that asynchronous help seeking provided the students the opportunity to "take their time, reflect, and refine comments, questions, and answers." [31]. Other studies corroborate the conclusion that seeking help by electronic means provides privacy and is perceived as less threatening by students [6], [32], [33].

### 2.2.2 Help giving

Help giving can be done by teachers, parents, friends and strangers. It is the process of responding to a request from a help seeker or someone in need. Any response to help seeking is considered as help giving. In this section the proceedings of help giving by a teaching staff for students are explained. Furthermore, the factors that influence the quality and efficiency are discussed. Finally, this section ends with the conclusion to RQ3 in subsection 2.2.3.

**Process of help giving** Downs has the following tips for the supporting staff of learning [23]:

1. Do not give the easy way out by showing the student how to do it
2. Make sure students ask for help
3. Let every student practice by themselves



4. Stimulate students to learn from their mistakes
5. Don't make the learning process too easy by giving too small steps
6. Give them enough time
7. Give adequate feedback
8. Develop the curiosity to learn
9. Let the students reflect on their own work
10. Indicate that practice is an important part of learning

Especially practicing and feedback are key elements of a tutorial session. Students need to practice how to combine abstract theory and methods to get to the answers of the exercises. Other key elements of tutorials are discussed in section 2.1.

**Quality of help giving** As discussed in the the section about the quality of help seeking, help can be divided in high level help and low level help. High level help is achieved when the help giver explains what steps need to be taken to solve the problem, then watches while the help seeker tries to solve the problem, helps with errors that may occur, asking follow-up questions to make sure the help seeker has understood the explanation, and lastly giving the help seeker praise [1]. Low level help, can be seen as unhelpful helping. The help giver gives the help seeker only the answer, without explaining the steps to get to that solution [1]. In order for high level help to be effective the help seeker needs to be mentally prepared for the high level help. When a student asks a specific question the brain creates space to store the solution to that impasse. Students who ask general questions or give a statement of confusion are not ready to receive high level help, because they first need to figure out what their level of knowledge is and where they need help. TAs mentioned in the interviews that are discussed in chapter 3, that students often give a general statement of confusion. The TAs explained how they would ask a lot of follow-up questions to get from the statement of confusion to an actual question. Several TAs mentioned that they advised students with errors to start an online search before asking for help, because the students had not bothered to look up the meaning of the error they got before asking for help.

The qualities of the teaching staff may influence the students willingness to seek help. Teachers who were available and affectionate, having a warm and caring character, stimulated students to ask more questions [29].

TAs are often students of the previous year and higher years who excelled in the course when they participated. The experience of the TA can influence the quality of

help they give. When a TA has more experience they are more likely to understand the subjects and give a higher level of help. However, more experienced TAs have a harder time empathizing with the students when they do not understand a step that seems logical to the TA. Next to more in depth subject knowledge experienced TAs have the benefit that they have more experience in explaining the concepts. When the students are at a certain topic an experienced TA is able to predict what type of questions will arise and how they can explain them best. The benefit of younger and inexperienced TAs is that they are more approachable and that lowers the threshold for help seeking. Another benefit the inexperienced TA has, is that they can remember what they thought and felt when they were making the same exercises. Having a mixed group of experienced and inexperienced TAs improves the quality of help giving.

**Efficiency of help giving** When students are working autonomously on assignments, delayed attention is a strategy that the teaching staff can use to stimulate the students self-reliance. Delayed attention implies that the teaching staff does not answer questions directly [34], [35]. The students are then forced to try to solve their problem on their own, before they ask for help. When student become more autonomous their study time becomes more effective [34]. Delayed attention has the pedagogical goal to stimulate self problem solving behavior and independent thinking [35]. During delayed attention the student can pick up the following strategies to solve their problem [35]:

1. Read the assignment and the theory again
2. Ask a peer for help
3. Research online for a solution
4. If the previous steps do not help the student can start working on the next question while waiting for help

Delayed attention has the additional benefit that the teaching staff can create an approach to handle the help requests. When the teaching staff does not use an approach to handle help requests they display waiter behavior, when the students ask for help they will immediately receive help. Resulting in the student who is best at seeking attention to be helped first, and shy students not being noticed and not getting the attention they deserve. It is therefore important to communicate the help giving approach.

In the quality of help giving the experience of the TA was mentioned. Distributing the TAs in a smart way could improve the efficiency of help giving. When the experienced TA help the students with the more advanced topics and the inexperienced

TAs helping with the basics, the help will be given much quicker. TAs mentioned in the interviews that they would ask another TA to help if the topic was too advanced for them. The students who sought help now have to explain their specific need for help again to the experienced TA. If TAs could select who they are going to help based on the question they have or the subject of their help request, this could improve the efficiency of help giving.

### **2.2.3 Factors that influence help seeking and giving**

The quality of help is influenced by the level of the help seeking [1]–[5]. When students ask specific questions they are better able to receive high level help [1]. Sharing questions and strategies can also improve the quality of help seeking [1], [12]. Asking questions online can reduce the perceived threats and increase the amount of questions that are asked [6], [31]–[33]. Factors that influence the efficiency of help are, delayed attention [34], [35] and smart distribution of expertise.

## **2.3 Technology Enhanced Learning**

Teachers that support their educational activities with technology are practitioners of blended learning. In blended courses the traditional classroom and online learning methods are combined [36]. Blended learning has the advantages of online learning combined with the social and instructional benefits of face to face learning [36]. For instance when the lectures are available online, students can choose to watch the instructions at a time and place that is convenient for them. Next to that the students benefit for face to face help and instructions during a lab session. Blended learning can enhance and increase the engagement of students [36]–[39]. When traditional educational activities make use of technology to support their learning activity it is called technology enhanced learning.

### **2.3.1 TEL domains**

When building a tool that facilitates technology enhanced learning (TEL), there are four domains that need to be taken into account [40]. Namely, the cultural beliefs of the user groups, their practices in engaging in both online and offline activities, socio-techno-spatial relations, and their interaction with the outside world [41]. Bielaczyc researched for each domain what the influencing factors of that domain are on designing an educational-technology tool, and what design questions the designer should take into account. In the next sections a summary of the findings

of Bielaczyc are given, including the design questions that need to be answered to fulfill that domain [41].

### **Cultural beliefs**

The mindset of the user groups determine how people interact and how they will use the tools that are designed for them [41]. The mindset is influenced by the social identity of a user. The social identity of a student is how the students view themselves as learners and how they perceive the roles of the people surrounding them in regard to their own learning. Another cultural belief that determines the interaction with the tool is the perceived purpose of the tool [41]. The following questions are design questions according to the Bielaczyc's design method [41]:

1. How are learning and knowledge conceptualized?
2. What is the student's social identity? According to:
  - (a) the student,
  - (b) and the teacher.
3. How is a teachers social identity understood? According to:
  - (a) the student,
  - (b) and the teacher.
4. How the purpose of the tool viewed?

Bielaczyc's questions lead to answers for the three domains that need to be taken into account when designing a TEL system [41].

### **Practices in online and offline activities**

What activities take place and how are the activities organized? Do the students work in groups or individually? What is the role of the teacher? These are design questions of the practices in online and offline activities domain. The questions help determine how the students and teacher interact and how they will interact with the tool. Other questions that involve this domain are:

1. What do the students need to produce?
2. How should the functionality of the tool be learned?
3. Should the student reflect on their work?

### **Socio-techno-spatial relations**

This dimension describes the organization of the physical and technological support that the student gets. It concerns the amount of technology in the classroom and how it is distributed, but also the physical aspects of the classroom that may support or constrict the design tool. The design questions that the designer should ask for this domain are:

1. Are the computers located in the classroom?
2. Do the user have handheld or wearable technologies?
3. Is there space next to the machines where the students can place their learning materials?
4. Where and what are the teachers doing when the students are working?
5. Do students work separately with the technology or do they share a device?
6. Is the work of the students private or accessible to all?

### **Interaction with the outside world**

How do the students interact, offline and online, with people outside their classroom context. The students can take on different roles when interacting with the outside world. They can receive information from the internet, or share their work online, or interact with others. This can be done physically and online. The benefit from interaction with the outside world is that the students can break through the limitations that their local sources provide. It also builds interaction and resource-gathering skills.

## 2.4 Human centered design

To be able to design a solution that meets the user needs this research was conducted using human centered design methods. Human centered design (HCD) sets the people the design will serve at the center of the design process [42]. According to International Organization for Standardization (IOS) the HCD process has five stages, see figure 2.5.

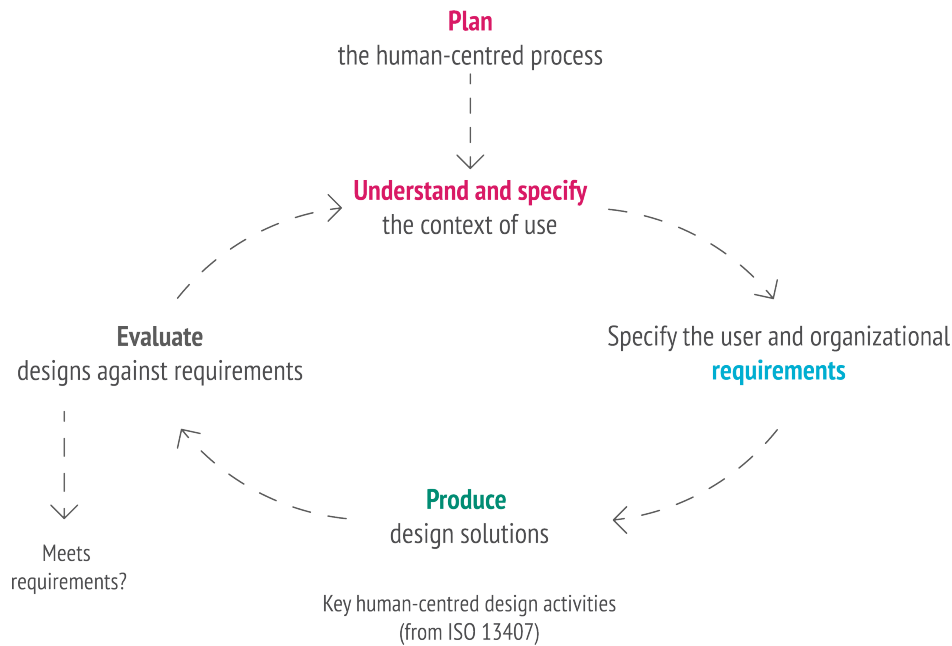


Figure 2.5: The phases of Human Centered Design [43]

IDEO however, states that the HCD process has three stages; the inspiration, ideation, and implementation phase [42]. IDEO is a global design and innovation firm, they developed the Design Kit, an online platform that guides through the design process [42]. During these phases of the IDEO design process the designer needs to diverge and converge to be able to consider all the possible solutions and select the solution that fits the user best, see figure 2.6. The design process of Creative Technology combines the phases of ISO and IDEO into one info graphic, see figure 2.7. It combines the cyclic process of the IOS and the diverging and converging of the IDEO design methods. The IOS design method begins with an ideation step, namely "understand and specify the context of use" this step can also be called the context analysis. Then, it converges by specifying the requirements, this matches the specification phase of the Creative Technology (CreaTe) design process. The next step is the production of design solutions and then the evaluation of these design solutions. The colors of figure 2.5 and 2.6 match the colors of the CreaTe design phases (see figure 2.7) that relate to these steps or phases. The inspiration phase of IDEO is equal to the step "creative idea" in the ideation phase

of the CreaTe design phase. In this research the Creative Technology design process is used as the leading design process. In the next sections the phases of the Creative Technology design process will be discussed. The results of these design strategies are shown in chapter 5.

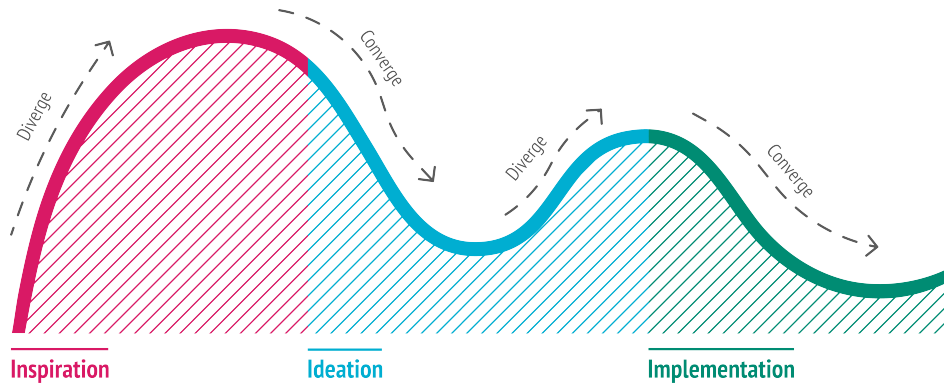


Figure 2.6: The phases of Human Centered Design [44]

### 2.4.1 Ideation phase

During the ideation phase the context analysis is important. The phase begins with a stakeholder analysis, identifying who will use and who will be influenced by the design [46]. For each stakeholder a cost and benefit analysis will give an overview of how acceptable each user group will find the design [46]. By performing expert interviews, focus group interviews and making scenarios a deeper user understanding is created [44], [46]. To make a valuable representation of the user requirements persona's are used. Persona's are hypothetical representations of actual users [47]. During the ideation phase related work and research are analyzed as well, this will be discussed in the next section of this chapter, namely the state of the art section 3.4. The result of the ideation phase will be the persona's, user requirements that are a summary of the interviews, and the first design ideas, see the pink section of figure 2.7.

### 2.4.2 Specification phase

The next phase is the specification phase, this phase is colored blue in the figures. In this phase the task/function mapping is important. The task/function map, includes all the functions and tasks of the users and gives them a priority ranging from high, medium, to low priority. The functionality map can be used to trade-off functions [46]. After the trade-off, the function-allocation between the design and the user can be made. The function-allocation shows which tasks are performed by the

user and which functions the design has to fulfill. Use scenarios are a elaborated version of task allocation, it is a concise description of a persona using the design to achieve a goal [47]. After the specification phase the early prototypes are made and the specifications that the users need are clear. The result of this phase will be the design specifications, these will be traded-off using the MoSCoW analysis, the results of that analysis can be found in chapter 5.

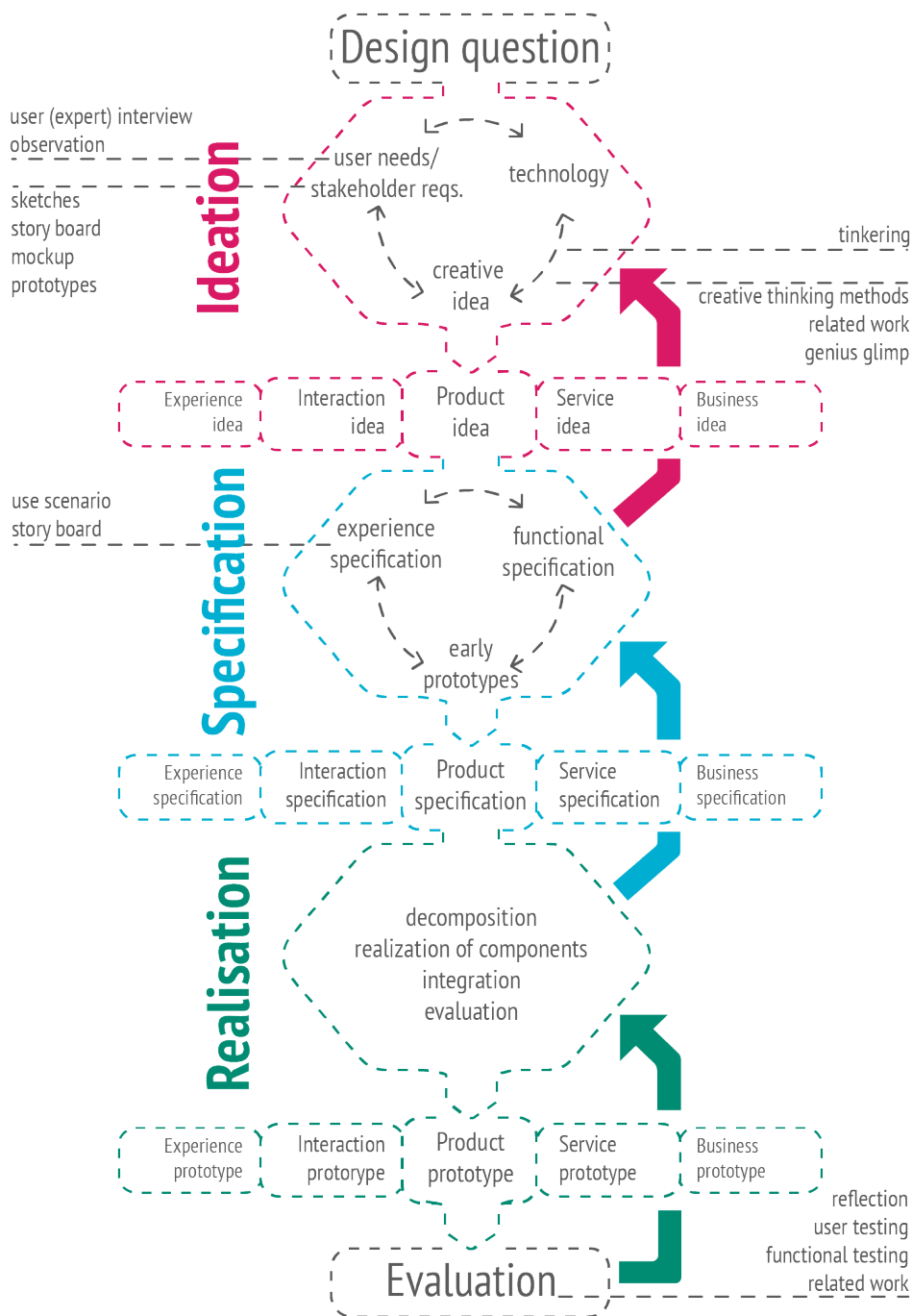


Figure 2.7: Creative Technology design process [45]



### **2.4.3 Realization phase**

Because the first prototypes are ready in this phase the users are brought back to evaluate the first designs. Lo-fi and hi-fi prototype testing help evaluate the design, the context and the interaction. After this phase the evaluation results will be processed and a working product prototype can be made and evaluated. The method of evaluation can be found in chapter 4, the results of the evaluation are discussed in chapter 5, and the final product prototype and future works are discussed in chapter 7.

### **2.4.4 Implementation phase**

Next to the design phases it is important to figure out what will happen with the product after this research is done. In order to design for the future it is necessary that the product meets the needs of the people who will take over the responsibility of supporting the product. This phase will be used in the context analysis, and the recommendations for the future will be discussed in chapter 7.

## **2.5 Conclusions of this chapter**

In this chapter the tutorial as a learning activity was discussed. Giving students the opportunity to practice the material is a powerful learning activity. When the tutorial exercises are meaningful all of the learning skills can be practiced during this learning activity. The factors that influence the efficiency and quality of help seeking are mainly the specificity of the help seeking and the distribution of the experience. Furthermore, the help seeking should be not threatening, several studies advised electronic means as a solution to reduce the perceived threat. In this chapter TEL design and Human Centered design were discussed to give background to the design strategies that were used in this research.



# Design

For this chapter the design phases that are discussed in 2.4 will be used. The first section of this chapter gives the context analysis. In the context analysis the stakeholders and the observations of tutorials are discussed. The context analysis section begins with the methods used and then reveals the results of the analysis. After the context analysis the user requirements and the requirements that were found in chapter 2 are combined to give a requirement list for the design. Next, the state of the art section, explores the high tech en low tech solutions that are already available. At the end of the state of the art section all the available solutions are tested whether they meet the requirements of section 3.3. The ideation section discusses the possible design solution. Further, the specification section uses a SWOT and MoSCoW analysis to further define what will be designed. Lastly the realization phase shows the design choices and hypotheses that the design of this research have. The methods for evaluating the design can be found in the next chapter:4.

**Research questions** This chapter answers RQ1, RQ4 and RQ5. In the context analysis RQ1 will be addressed. The state of the art gives an overview of the available technologies, answering RQ4. The available technologies are then tested if they meet the requirements. Lastly, the design solution is discussed in section 3.5 to 3.7.2.

RQ1: What are the pitfalls of programming tutorials for each user group?

RQ4: What technologies are available to improve tutorials?

RQ5: How can the available technologies be used to create a TEL solution that fits the user needs and the MRQ?

## 3.1 Context analysis

### 3.1.1 Methods

In section 2.3.1 the design of a TEL system is discussed. The section describes the different design questions that need to be answered. Those questions and the ideation phase of the CreaTe design process together give the context analysis. In this section the methods used to create the context analysis are discussed. Then the results of the context analysis are given.

#### Stakeholder analysis

There are three types of user involved in a tutorial session. The teachers, the teaching assistants and the students. In order to make a human centered design, the characteristics, activities, attitudes and emotions of the target users need to be identified. To understand what each group needs and wants interviews and focus group interviews were conducted. To get a clear description of each group persona's were made, these can be found in chapter 5. Next to the users the other stakeholders that will be influenced by a innovation should be taken into account. The other stakeholders are the people who will be responsible for the technical support that the intervention might need.

#### Expert interviews

In order to describe the user needs and the stakeholder requirements interviews with experts were conducted. The interviews were semi structured, giving the experts the ability to elaborate on their experiences and to add personal insights to the interview. Experts are able to give a system-level view of the project area, they might be able to tell about recent innovations, successes, and failures [42]. Further, the experts can offer the perspectives of the involved organizations [42]. Teachers of programming tutorials of the University of Twente were considered experts on the user needs of a tutorial. The teachers were approached via email and the interviews were conducted in person.

For the interview an interview guide was made, which can be found in appendix A. An interview guide should include the purpose of the interview, the ways of recording the conversation, and a description of the anonymity disclosure and the feedback of the results.

The purpose of the interview is to get an experts view on tutorials, the teachers opinion on how they can be improved and what the goals and pitfalls of tutorials are.

Eight teachers were interviewed using the interview guide from appendix A. The interviews were audio recorded and transcribed, the full interviews can be found in appendix B-I.

### **Focus group interview**

To get the opinion of the students and teaching assistants focus groups were made. According to Vaughn the goal of a focus groups interview is to discover why people act, think, and feel as they do [48]. The advantages of group interviews over individual interviews include; a wider bank of data, respondents comment on each other and initiate responses, respondents stimulate each other to discuss, and the respondents become more genuine because they are not required to answer every question [48]. In order for the focus group interview to be successful a couple of steps need to be taken. Firstly, the general purpose statement needs to be formulated. Then the moderator guide needs to be written. Thirdly, the focus group needs to be selected. Lastly, the setting of the location needs to be determined and guaranteed. Each step will be discussed below.

**Purpose statement** The purpose statement reflects an overall summary of the goal of the focus group interview [48]. In this case the purpose statement is: To get information from the participants to verify an refine the hypotheses. To help the moderator lead the discussions a list of information the researcher does en does not require is made. Does:

- How the participant feels about tutorial questions and answers
- What the participant finds important during tutorials
- Are there frustrations that the participant has encountered during tutorials
- How do the student assistants regulate the work flow during a tutorial
  - What works well
  - What could be improved

•

Does not:

- Need to know subject/course specific information
- No need for environmental information
- Do not need information about tutorial preparation

**Moderator guide** In order to get a flowing discussion that stays on topic a moderators guide was made. The layout of the sections is based on chapter 3 of Vaughn's book [48]. The moderators guide that was used during the focus group can be found in appendix K.

**Group size of a focus group** There are several contradictory opinions about the size of a focus group. Twinn used three to four participants in the focus group, while Kitzinger states that the ideal group size is between four and eight people, and Vaughn has found the ideal group size to be six to twelve persons [48]–[50]. Because there is no standard focus group size, the minimal size for the interviews will be four and the maximum eight. When there are more than eight participants the group will be split in two focus groups. The focus groups should be homogeneous in experience. Further, the groups will be as equal as possible in gender distribution.

**Interview setting and equipment** The focus group interview were held in an inviting environment that had an informal ambiance. As a precaution to distractions the door of the room held a note informing outsiders that they could not disturb the session. Participants were aloud to leave and enter the room to go to the bathroom. In order to comfort the participants food and drink was available. For the recording of the interview a camera was set up and all the participants were asked permission before the recordings started, Next to the video recorder there were name tags to improve in the flow of the conversation and to help the moderator when she needed to address a participant.

**Ethics** Because the focus group interviews were video recorded, the participant need to be informed of what happens with the recordings and give informed consent that the recordings may be used.

### **Observation of tutorials**

To gather information on the socio-techno-spatial relations several tutorials were observed. During the observations the following points were annotated:

1. how students could ask questions or request a sign off
2. the amount of raised hands were counted
3. how fast a student got help after requesting help
4. the general ambiance

### 5. events that took place

The last bullet point is intentionally vague, this was to prevent tunnel vision of the observer. In this way the observer would be susceptible for events that might influence the application that were not previously known.

## 3.1.2 Results of the context analysis

## 3.2 Ideation phase results

In this section the results of the stakeholder analysis are given. These results relate to research sub-questions 1 and 3 of section 1.2.

Sub-question one: What are the pitfalls of programming tutorials for each user group?

Sub-question three: What factors influence the efficiency and quality help seeking?

The stakeholders of this research were teachers, teaching assistants (TAs), students, and supporting staff. For each stakeholder the results of the user analysis are discussed in the subsections 3.2.1 to 3.2.5. For each stakeholder a persona was made, the persona gives a summary of the results of the user analysis of that stakeholder.

The ideation phase also included a context analysis. The results of the observations can be found in 3.2.7.

### 3.2.1 Teacher Results

Most of the teachers used Teaching Assistants (TAs) to help them support the tutorials. Several teachers mentioned that the TAs were useful, because they had learned the topics quiet recently and were better able to understand the struggles of beginning students than an expert in the field. Of the eight teachers, three try to be present at all the tutorials, one mentioned that he would like to be present at at least a couple sessions, and two mentioned that they were not present at the tutorials. The teachers who are not present at tutorials, mentioned that the TAs are experienced enough to handle the tutorials on their own.

### Teacher responsibilities

The teachers who are present at the tutorials have the following responsibilities; help students with questions, give instructions to students, and motivate or help students focus. Some teachers use signing off the assignments. One of the teachers who used sing offs had an online system where the students could hand in their work.

Two of the teachers mentioned that they held short lectures during the tutorial to instruct the students.

### **Student behavior**

**Desired behavior** Students need to be prepared for the tutorial, this means having a laptop with the needed software on it. The courses that have a manual need the students to bring the manual as well. Most of the tutorials provide more assignments than the students need to complete. It is expected that the students show initiative in their own learning process. This can be done by asking questions, collaborating with fellow students and by actively working on the content. Teachers also mentioned that they wanted students to ask the more in depth questions. Most of the tutorials have deadlines for finishing assignments, some are just indication deadlines and others need to be signed off to complete the course. It is up to the students to schedule their work and make sure they finish on time. In all the tutorials it is allowed to work in pairs, however signing off should be done individually.

**Actual behavior** When students have several courses with deadlines and the programming deadline is at the end of the module, then it is often observed that the students procrastinate the programming assignments to work on the other deadlines. Some students do not dare to ask questions. One teacher noticed that when using shake speak and anatomizing the question asking that he got more responses from his students. One teacher mentioned that he noticed that the students did not know how to ask questions. Another teacher agreed with this observation and presumed that the students did not know how to ask questions were new to programming and learning the new vocabulary. All most all the teachers mentioned that the students showed up unprepared to the tutorials, by not having the proper software installed. During the sign off sessions students got tired of raising their hand, and one student even made a paper hand he could raise. When TAs are in the room students ask the TA to help them solve problems rather than their fellow student. Another observation several teachers made, was that students did not work on the topic during the tutorial. The behavior of the students could differ from working on a different course to online gaming and video's. Although collaboration is encouraged their are always some students that sit separately and work alone. Other behavior that is seen by several teachers is the wait-and-see attitude, where students wait to be instructed, and they only want to make the mandatory assignments.



### **TA behavior**

**Specifics** The TA is usually the best student of last year. Teachers like to use TAs because they have a fresh view on the learning process and still know what it was like to learn the content last year. The teachers also mentioned that TAs can sometimes explain the content better because they are closer to the experience of learning it themselves. TAs are easier to approach for students.

### **Responsibilities**

1. Help students with their questions
2. Give feedback to the teacher, on what subjects were hard for the students
3. Grade assignments
4. Test students on their knowledge by asking questions during the sign off
5. Signing off assignment
6. Keep students focused on the assignments

### **Mandatory lectures**

There are three courses of the eight who use mandatory tutorials. The other courses use sign offs or a mandatory assignment to motivate students to come to the tutorials. One teacher lets the students bring their assignments to the exam so they can solve the exam questions by using the assignments that they made in the tutorials.

### **Enabling factors**

For the teachers a tutorial needs the following enabling factors:

1. Manual
2. TAs
3. Laptops with working software
4. Power outlets
5. Enough space to walk around, and sit next to the student
6. Well defined assignments

## Main frustrations

A frustration that several teachers mentioned was that students were unprepared for the tutorials. The students had not downloaded the right software or had not brought their laptop at all. Other frustrations were about the attitude of students. Especially a passive attitude from the students was frustrating for the teacher. When the students did not ask for help or were lagging in the assignments.

## Use of educational tools

One of the teachers did not use any educational tools outside the mandatory Learning Management System (LMS) of the university. The other seven do have experience with educational tools, varying from video recordings, to physical tools that were used in the tutorials. One teacher had a lot of experience in massive online open course teaching, and therefore a lot of experience with online educational tools.

## Teacher persona

In figure 3.1 and 3.2 two personas of teachers are shown. The personas differ in age, because the expert interviews showed different user needs for different age groups.

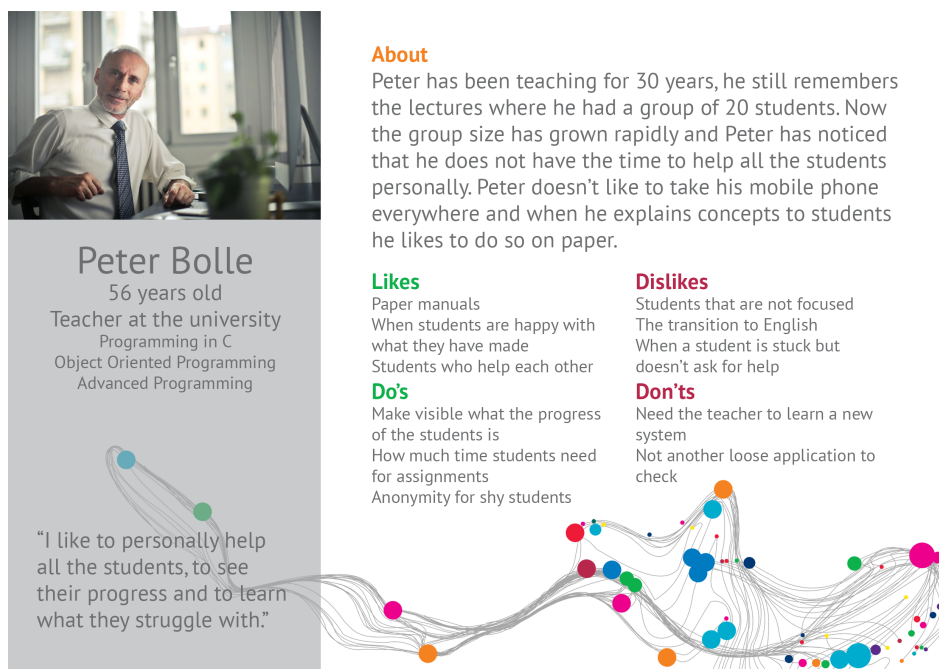


Figure 3.1: Persona of a teacher

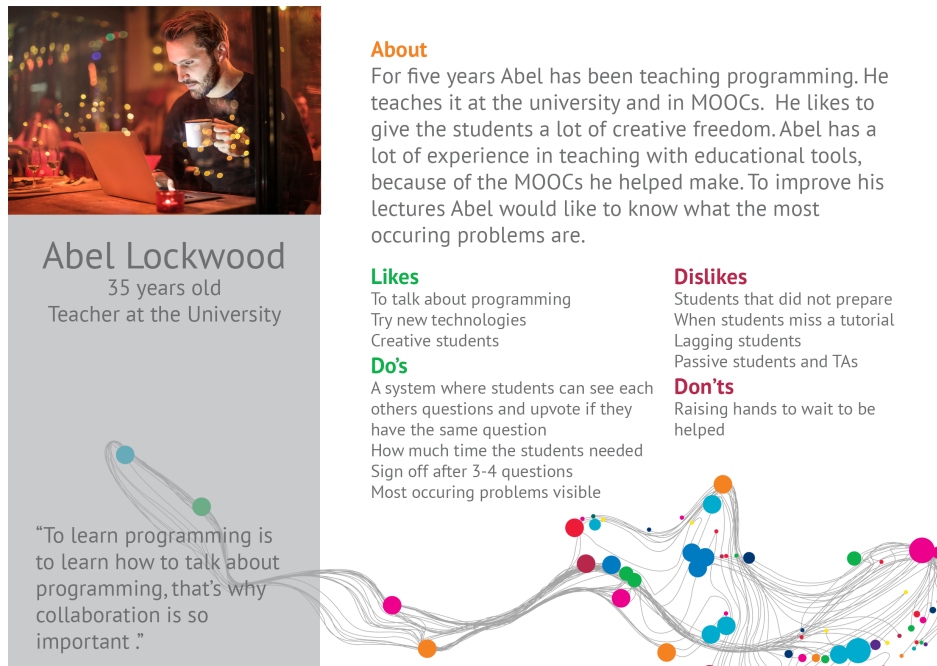


Figure 3.2: Persona of a teacher

### 3.2.2 Teaching Assistant results

In appendix M and N the full transcriptions of the two focus group interviews can be found. In total 12 TAs participated in the focus group interviews.

#### Student behavior

Students work on the assignments, when they get to a deadlock or they have a question they ask the TA.

#### Responsibilities of a TA

The most important of a TA is figuring out what the student wants to ask and help them figure out how to solve their question. The TAs need to be present and wait till a student ask for help. To be able to help they need to prepare for the assignments before the tutorial. Students expect the TAs to have organizational knowledge as well, they expect them to know when the deadlines are due and which assignments are mandatory. When helping first year students with programming one of the main questions the TA asks the student when helping them is "Have you searched on-line?". The TAs need to guide students toward the solutions instead of giving the solution to their homework. In the first tutorial session the students that have not installed the software expect the TAs to be able to help them when they have troubles with the installation. When a student is experienced and wants to learn more TAs

can give them some extra information and challenge them. Several TAs mentioned that they had to give the answer to the same question over and over again. Several TAs were also responsible for grading assignments, and one TA was responsible for controlling the online platform on which the students hand in their work. Almost all the TAs had experience in assisting tutorials and they mentioned that the experience was beneficial for their ability to help students. All the TAs mentioned that they had to take students step by step through the debugging of code, and mentioned that it should be taught to the students plenary. Two of the 12 TAs used the questions that were asked by the students to give the teacher feedback on the main struggles of the students and for tips in the manual. Out of the tutorial the TAs do not communicate with the students, expect when they have asked the student to email them. With the teacher some TAs email, one also gathers checklists at the teachers office. During the first weeks and near the sign off deadlines the TAs noticed an increase in the demand for support from the students.

### **Do's**

1. If there would be a system to improve the tutorials it should be accessible on a mobile phone
2. If students would sign in for a queue, they should be able to sign out when they do not have a question anymore
3. The system should teach first year students how:
  - (a) they could search online to solve their question
  - (b) to debug code
4. TAs want to be able to focus on more difficult questions than the "have you searched online?" question
5. When students sign in at an online queue the TAs want to be able to control who they want to help first
6. In order to be able to know who to help first TAs want to know:
  - (a) in what category the student has a question
  - (b) at what assignment the student is
  - (c) if the student has a question or wants to sign off
7. Track with what assignments and categories the students struggle

8. Get students with the same question together so the TA can explain the theory once and help them figure out the solution together
9. If a system is build, it should save time
10. TAs need to answer the questions in person to figure out what the student really want to know
11. Lower the bar for asking questions, especially for shy students
12. Give students as much time as possible to practice
13. Have enough TAs to be able to support the students

### **Don'ts**

1. TAs don't want to be a code reviewer, where they get 100 lines of code from a student and the comment that it does not work
2. Assignment sets that suck, because if the assignments are not clear it takes more time to help and that increases the waiting queue
3. Let students wait for half an hour till they get help, this is not productive
4. Communicate with students outside of the tutorials
5. Frustrations that TAs have with the behavior of students:
  - (a) Students with a bad attitude
  - (b) Students who don't read the assignments frustrate the TAs
  - (c) Students who can't communicate in English
  - (d) Lazy students who try to make the assignments the last minute
  - (e) Students who are afraid to ask questions
6. TAs don't want to communicate with the students outside of the tutorials, expect when they ask them to
7. TAs do not know all the names of the students and don't want to be obligated to learn them
8. If there would be a system that puts students in an online queue the system should not:
  - (a) Lose the personal touch that TAs have with students, the TAs want to be able to guide the students toward the solution in person and not online

- (b) Show students that are advanced in programming how they should search online for the answer to their question
- (c) Create extra work for the TAs
- (d) Students should not be able to misuse the system by putting themselves in the queue in the first minute, when they are not yet need help or are not ready to sign off
- (e) Obligate the TA to walk to the front of the classroom when they want to choose who they want to help next

## TA persona

For the TAs there are also two personas. The first in figure 3.3 an experienced TA is shown. The second persona shows a TA that is still figuring out how to be a good TA (see figure 3.4.

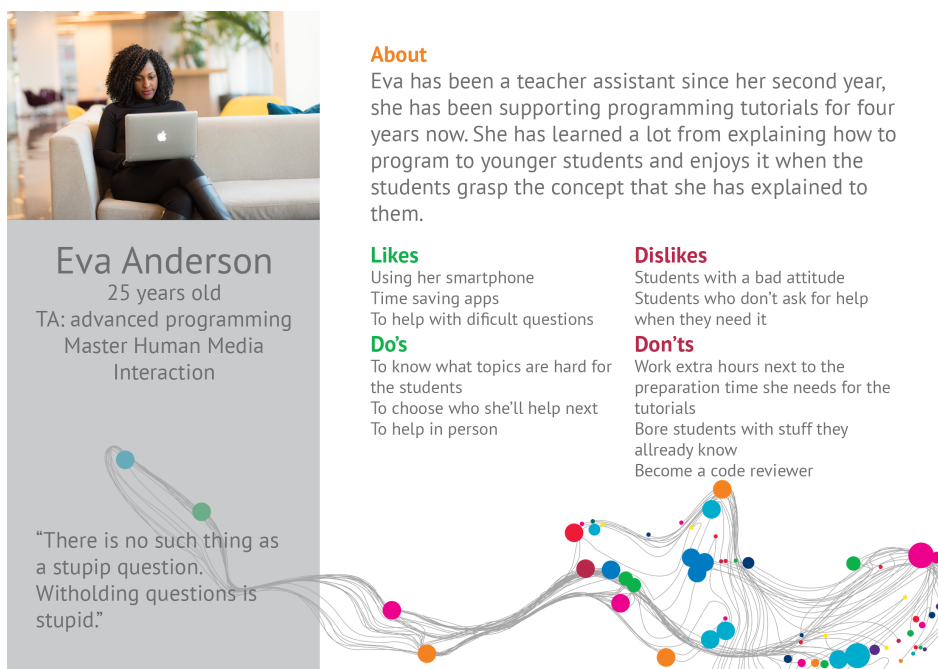


Figure 3.3: Persona of a Teaching Assistant

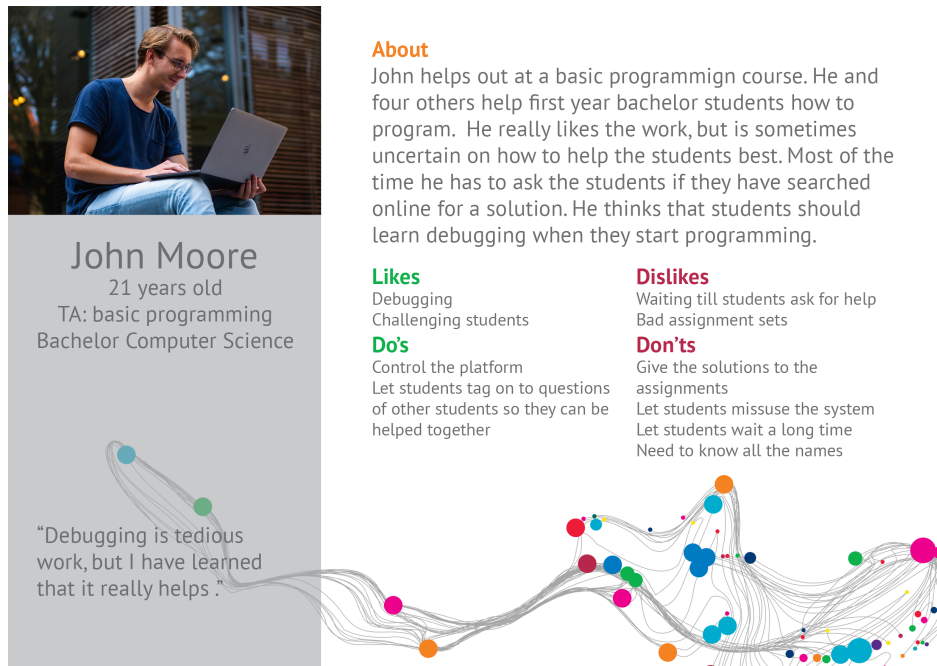


Figure 3.4: Persona of a Teaching Assistant

### 3.2.3 Students Results

Sadly there were only two students who wanted to participate in the focus group interview. However, next to the official focus group interview I had informal interviews with students by asking them about their frustrations concerning tutorials. The word cloud in figure 0.1, shows what topics were discussed most during the group interview with students. What the students found particularly frustrating was when they had to wait a long time. Especially with a raised hand, because they mentioned that their arm would hurt, and they would feel useless while waiting. Another frustration students have is when they could not ask their question because there was not enough time. One of the students mentioned that she would rather work at home and come to the next tutorial to ask her questions during the start of the tutorial. The opinions about a rigid planning with sign offs and the freedom to plan their assignments were divided. Students mentioned just as the TAs did that too little TAs results in longer waiting times, and both groups found this frustrating. When the assignment sets are vague or a lot of students have the same questions the students feel that there should be a general announcement to solve this, instead of handling the same question for every student. The students from the focus group had a positive attitude towards asking questions online and seeing the questions of the other students. One of the students did mention that she could envision students that have fear of failure could be anxious about sharing questions. The students mentioned that they disliked students who misused the systems that were used during the tutorials. Cases

of misuse were; students who would put their name on the board with the queue for the sign off before they were actually ready with the assignments, and students who would put their group in the time slot of another group in an online spread sheet for Q and A time slots. The students mentioned that students who cheat the system make it more chaotic and that they disliked students who would cut in line. The students had no problem with the option where teacher could view their progress in the assignments. If there is a queue for who is next in line for help the students did not mind if someone else would be helped first, as long as the question of the other student was short. The students also mentioned that if they had only one last question or the last sign off before they could go that they would mind people being helped before their turn.

### 3.2.4 Students persona

The students persona shows a programming team in a beginners course (see figure 3.5).

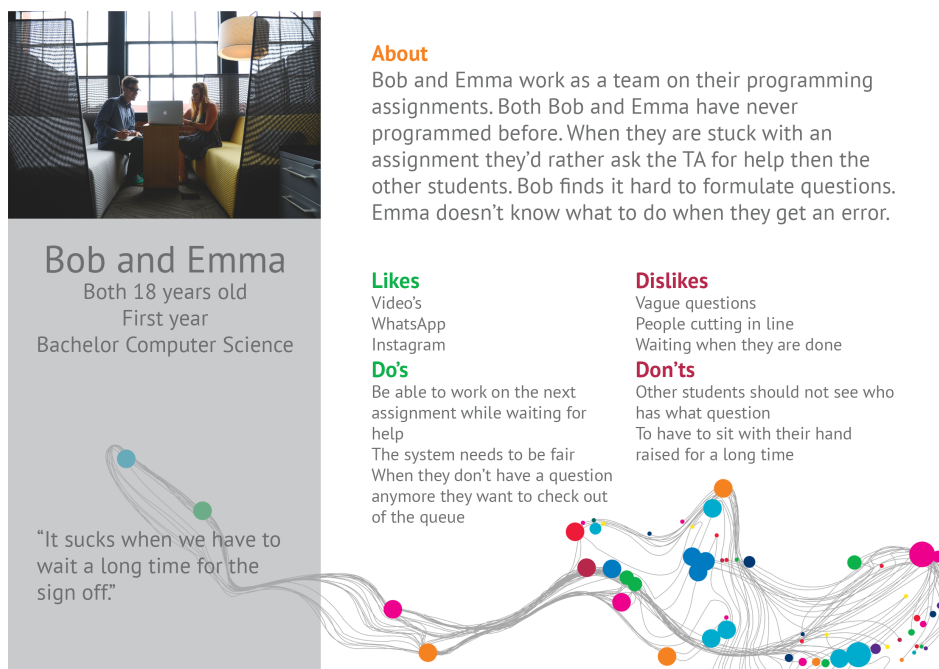


Figure 3.5: Persona of a Students

### 3.2.5 Supporting staff Results

Because a hi-fi solution has higher maintenance prospects than lo-fi tools, the question who will take care of the tool is an important question. In the interview with a technical expert from the TELT team of the university, the requirements for the uni-



iversity in general and the supporting staff became clear. The results can be found in the persona that is portrayed in figure 3.6

### 3.2.6 Supporting staff persona

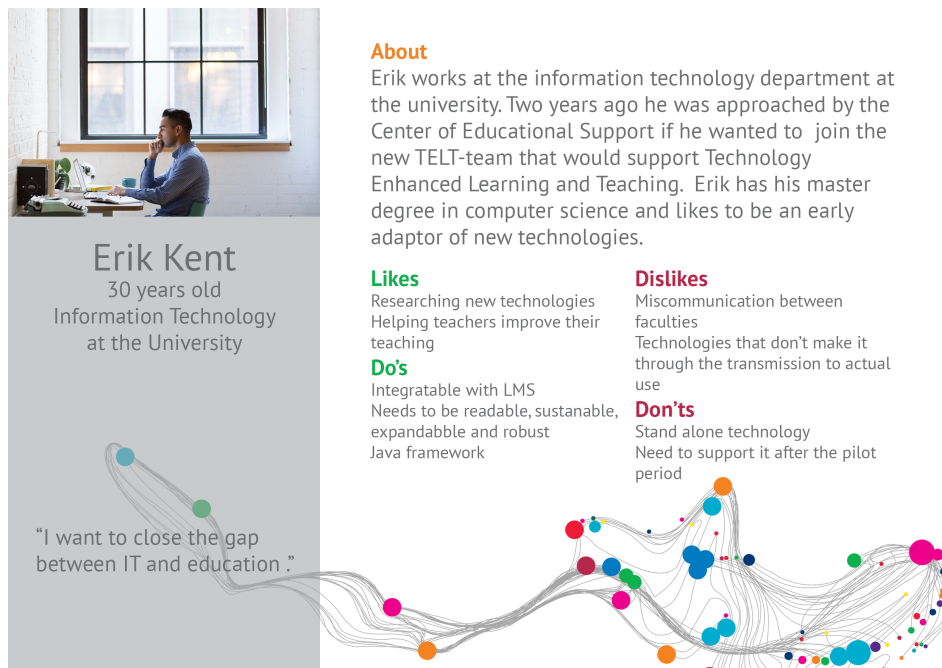


Figure 3.6: Persona of a TELT-team member

### 3.2.7 Context Analysis

Because tutorials take place in different surroundings the context analysis was done by observing several tutorials from different studies. In total three tutorial sessions were observed, of which one was a master course tutorial. Some of the teachers mentioned the restrictions of certain rooms and their preferences for the room in the interviews.

#### Observations

There were three different rooms that were observed. A room in Carre, a room in the Oost Horst and the SmartXp in the Zilverling. These rooms all differ from each other.

**White board sign off** The first observation was done in Carre, the tutorial session was special because they introduced a way of dealing with the raising hands problem in that session (see Q.1). Namely, the students had to write down their name on the

white board when they were ready to sign off assignments. There were 42 students, 2 TAs and one teacher present at this tutorial. The queue on the board did solve the raising hands question but it wasn't a fair system. When no one was looking students placed their names above other students, and students had put their name on the board before they were done estimating how many names were on the board and if they would be done when it was their turn if they would step into the queue at this point. The crossing off of the names went wrong a couple of times, resulting in the TA or teacher calling a name that was being helped at that moment by another TA. Also the students did not put their names below each other but made a garland within the predetermined column, this was confusing for the TAs and the teacher because they didn't know who was first. Some students signed off their assignments individually and some as a group. The teacher needed 10 minutes on average to help students and the TAs 18 minutes. Most of the students that had to wait to be signed off were bored and doing something else on their phone or laptop. The room was too small for the teacher to walk around. The teacher had ordered extra power outlets so the students would all be able to plug in. If the TAs or the teacher wanted to help a student there were no chairs left next to the students, so they had to lean on a table or squat next to the students to be able to help. The teacher wanted the students to sign off after three to four assignments, but only 15 students did this, the other students all signed off all the assignments when they were done.

**A lot of support per student** The second observation session(see [Q.2](#), was in the Oost Horst. This room was large with several projectors and five rows for the students to sit in. This session was not mandatory and started with 25 students and after two hours there were 32 students present. Next to the students there were two teachers and five TAs at the session. During the observation there were 35 raised hands of which 33 got attention. Almost all questions had a response time within half a minute. In the table in [Q.2](#) the front rows asked more questions than the rows behind them. On average students in the front asked 1.7 questions per student, in the middle 0.66 and in the back 0.86. However the TAs mentioned that it was less busy than the week before, so this is not a representation for all the tutorials of this course.

**Master course** The last observation was of a master course, the session took place in the Zilverling in the SmartXp room. For the full observation see [Q.3](#). This course had too many students, so they decided to split the lab-sessions into two groups of 120 students. The room is a large rectangle with in the front a large projector screen and rows that are split in the middle, each side of a row can seat 4 students. For each side there is are mobile power outlets. On the left of the room

there is a corridor. During the observations 30 students raised their hands, of which 6 out their hands down. Of the six students who lowered their hand one did this within 7 seconds from raising, the rest waited for more than a minute before they gave up, one of those waited for 3 minutes with his hand raised. On average the students had to wait for 40 seconds before they were helped. Per 16 students there was one supporting staff.

### **Cultural beliefs**

It is expected of the students to show an active learning attitude and be proactive in asking for help. However, teachers and student assistants have noticed that students don't always ask for help, and that students have a hard time to describe what their stuck with. If they are stuck students would first ask the teacher or TA for help and then their fellow students. The teacher and the TA are viewed as an all knowing source of information, instead of someone to help you figure out the solution. Students don't like the hand raising and the waiting on their sign-off, especially when they can go after they are helped. Teachers who are present at the tutorials like to gather information about what the students find hard and their progress.

### **Activities**

During tutorials students work in pairs, in some courses they are allowed to work in bigger groups, but generally pairs are made. Students work on their laptops to make assignments or to work on a project. When the student gets stuck or has a question they can ask a TA or the teacher for help. Online the students can look up references and other sources that help them solve the assignments. Most courses have a paper manual with the assignments and more info. Some courses have a book that contains information about the topics of the course. The students often need to sign off or hand in assignments to show their progress and their understanding of the concepts. If their would be a tool, then it should be intuitive and not ask extra time from the students and support to learn how to use the tool.

### **Socio-techno-spatial relations**

Students bring their own laptops, usually with the needed software installed. Regarding wearables all students have a smart phone, some students have a smart watch, and some have a tablet . The TAs all have a smartphone, a laptop, and some have a smart watch or tablet. Some of the teachers bring their laptop to the tutorials, most of the teachers have a smart phone, and some of the teachers have a smart watch. In the classrooms there is a computer located in the front of the room,

that can be accessed with all university accounts. It depends on the classroom how many power outlets are available and how many seats are in the room. When students don't need help the teacher and TAs usually sit in the front of the room facing the students. Sometimes the teacher or TAs walk around and ask the students questions about their work. When several TAs are not helping students it is common for TAs to work on their own study material on their own laptop. Teachers can be seen grading or doing administrative work when they are not helping students. During the tutorial the students work in pairs, most of the time they both work on their own laptop on the same assignment, but sometimes students share a laptop. One of the teachers mentioned that especially during the first lecture when not all of the students managed to install the software it is common for the students to share a laptop. The work of the students is mainly private and only stored at their laptop. One course had an online hand in system, where the students had to hand in their solution to the assignments. In this system the teacher and TAs could access and review the hand ins of the students. When work or questions of students become accessible to all the user groups the work should be anonymous, because all the groups mentioned that it would be off-putting for students with performance anxiety. The students mentioned that they would like to see the questions of other students because it would help them see if other students had the same problems. Teachers and TAs declared that they would like more insight in the kind of questions that were asked, and that they would like to be able to help students with the same question together. For the technical support it is important that if an application is made that they can support it. To be able to support the application it has to be written in java and preferably be an LTI application.

### **Interaction with the outside world**

According to the TAs the the first year bachelor students need to learn that they can search online to get an answer to their question, and then how to read the documentations online. The students often have several platforms, like Whatsapp, Facebook, and Slack, on which they share information and communicate with each other. Especially for programming languages their is a lot of online documentation. If students have a question outside the tutorial they usually email the teacher or ask it the next lecture, some teachers prefer the discussion board on the LMS over email. TAs do not like to answer questions outside the tutorials. TAs also do not like to answer questions online because it takes a lot of time to explain it by text instead of in person. Further, TAs made known that many students do not know what they want to know, so the TA has to ask follow-up questions to figure out what the question is and what the students knowledge is so far.

## 3.3 Requirements

The technologies of the state of the art will be tested if they meet the requirements that are drawn up in this section.

### 3.3.1 Help seeking

From the factors that were described in section 2.2.3, the following questions were composed.

1. Does the technology improve the level of help seeking?
2. Does the technology lower the threshold for help seeking?

### 3.3.2 User requirements

In the context analysis the user requirements are discussed. The most important user requirements a solution should meet are:

1. Face to face interaction, because the TAs mentioned that they value this the most
2. Fair system, the students and TAs mentioned that the system should be fair, it should treat everyone equally
3. Share questions, several teachers mentioned that they would like the students to share questions
4. For the students to ask better questions, this requirement will be tested with the quality of help seeking/giving requirement
5. Give insights of the most occurring problems, teachers want to learn from the problems to improve their courses
6. Give the instructions at the moment the student has the question, not earlier, not later. This was mentioned by an experienced teacher who did not want classical instructions because it would discourage students that were working at a different pace

### 3.3.3 Solve the hand raising problem

1. Does the technology solve the physical constrain?
2. Does the technology facilitate a fair system for help seeking and giving?

3. Does the technology allow the students to continue to work while they are waiting for help?

### 3.3.4 Help giving

The solution should save time. The TAs should not be asked to put in extra hours of work to make the solution feasible. The solution should help students who are at the same question simultaneously, in order to help more students faster. The solution should give a structured way for help seeking to improve the students efficiency when they have a question.

1. Does the solution save time?
2. Does the technology facilitate delayed attention?
3. Does the technology enable the distribution of expertise of help givers?
4. Can the teaching staff help students who are at the same exercise and have a question simultaneously?

## 3.4 State of the art

In this section previous works in the field will be discussed and how they could solve the research question. The section is divided in two subsections; Hi-fi solutions and Lo-fi solutions. Hi-fi stands for High Fidelity, meaning a high-tech prototype. Hi-fi prototypes allow the user to interact with the system [51]. However, hi-fi has the downside that it costs more money to produce [51]. Low fidelity (lo-fi) products are most of the time a mixture of paper, cardboard and other low cost products [51]. The main advantages are that the financial cost of producing these products are low and the lo-fi prototypes help diverge during the design process [51]. Egger even says in his article that lo-fi prototyping can reduce tunnel vision during the design process [51]. For every solution discussed in this section the advantages and disadvantages are listed after the explanation of the solution.

### 3.4.1 Low tech solutions

#### Whiteboard

In observation Q.1 the teacher of the course tried out a sign off system that was recommended by his colleagues. The students had to get in the sign off queue by writing their name on the whiteboard. The teacher and TAs would call who was next

in line and that student would be helped. When the TAs/Teacher found the student who's name they called they would strike through that name on the white board and approach that student.

### **What problems does this application solve**

- 

#### Advantages

- The students do not need to raise their hand to wait for help
- Students need to walk to the front of the room to put themselves on the list, this threshold could reduce students to put their name on the list for every error that occurs
- The list is visible to everyone giving a sense of progression and waiting time

#### Disadvantages

- The list becomes unclear very fast, because students have different hand writings and do not apply the same formatting of the list
- When the supporting staff forgets to strike through a name, the name will be called twice, this induces frustrations for the caller
- Students do not treat the list fair
  - When they believe nobody is watching they place their names higher on the list
  - Students put themselves in the list before they have finished the questions they want to sign off

### **Code of conduct dice**

In Dalton education in the Netherlands many primary schools use the "code of conduct" dice<sup>1</sup>. The dice has the following color codes according to the manual [52]:

- Red: I am working quietly, do not disturb
- Orange: I have a question for my neighbour or I am collaborating
- Questionmark: I have a question for the teacher

---

<sup>1</sup>Translated from the Dutch name: Gedragscode kubus

- Green: I am done with an assignment
- Blanco: You can ask me for help: neutral

The dice is used during self regulated learning activities. Every student has a cube on their table and the teacher has a large cube that indicates the code of conduct for the whole class [52]. When the student wants to show their preference they set the cube with that color upward. The cube is also used during instructions, when the general instructions are done the teacher can give the students the option to follow more instructions or to work for themselves and set their cube to red, this helps the teacher get an overview of who is participating in the extra instructions [52]. The dice can be seen in figure 3.7. One primary school explains in their school guide that at their school every pupil own a dice. They get this dice in first grade and keep on using it until the sixth grade [53]. The dices are used to teach the children how to cope with delayed attention [53]. Coping with delayed attention increases the problem solving skills of the child, because they have to look for other ways to solve their problem [53].

#### Advantages

- Children learn to cope with delayed attention
- Children learn that it is not always possible to get attention when you want it
- The teacher can differentiate by giving extra instruction to the children who need it
- The problem solving skills of the children are developed
- The child can define what type of attention they would like
- The child can define if they have a question for the teacher or if they want their neighbours help
- When the child needs help they do not need to raise their hand

#### Disadvantages

- You need to buy a dice for every child
- The children need to learn how to use the dice, it is not intuitive
- The children who are waiting the longest for the teacher do not get help first, this could be seen as unfair





Figure 3.7: Code of conduct cube [54]

### Paper cups

Dylan William describes in his book about assessment for learning that schools can use simple tools as paper cups for assessment for learning [55]. The cups can be used for self assessment during instructions, the students begin with the green cup on top of the other cups, if they feel that the teacher is going to fast they can put the orange cup on top, and if the they do not understand the instruction and want the teacher to stop they can use the red cup [55]. The cups can also be used during self regulated learning, the colors then mean:

- Green: I am working fine
- I need help but I can keep working
- I need help and I can't keep working

By indicating what type of help the student needs they learn to self assess what knowledge they have. Students who are reluctant to show that they do not understand are more willing to show it with the cups than telling out loud [55], see figure 3.8. Also students mentioned in Dylan Williams Classroom experiment that they liked to use the cups, one student "felt more focused", another student "I think the cups are a good idea, because you can get a feel of what the whole class is thinking", and the teacher liked to use the cups, because the students started faster on the assignments and she felt that she could get to the students who needed help fast and the students did not need to keep there hand up anymore [56].

#### Advantages

- Students who are stuck get help faster
- The colored cups give a quick overview of who needs attention
- The cups give a sense of community
- When students have a question they do not need to raise their hand
- Students are more likely to show with a cup that they do not understand the material than by saying it out loud

### Disadvantages

- The cups are fragile
- As with the dices the cups do not indicate who requested help first



Figure 3.8: Traffic light cups for assessment [57]

### **META-card**

The META-card is a tool that helps students formulate meta cognitive strategies [58]. Hattie shows in Visible Learning that teaching meta cognitive strategies to students has a high effect on the study results of the students [16]. The META-card consist of four questions that the students must ask themselves [58]:

1. In which phase of problem solving am I?
2. What questions can I ask when I am stuck?
3. What strategies could I use? Which of these strategies is the best for this problem?
4. Did I successfully solve the problem?

The card helps student to chop up the problem in smaller steps, to try a strategy and then reflect if this strategy has worked [58]. These problem solving skills are very use full during self regulated working and during delayed attention.

### Advantages

- Students learn meta cognitive skills
- Students learn to solve problems on their own
- Students start to reflect on their strategies, this makes them more self-reliant

### Disadvantages

- This method needs to be learned by the staff and students
- It takes time, practice and support for this method to succeed
- It does not solve the hand raising problem

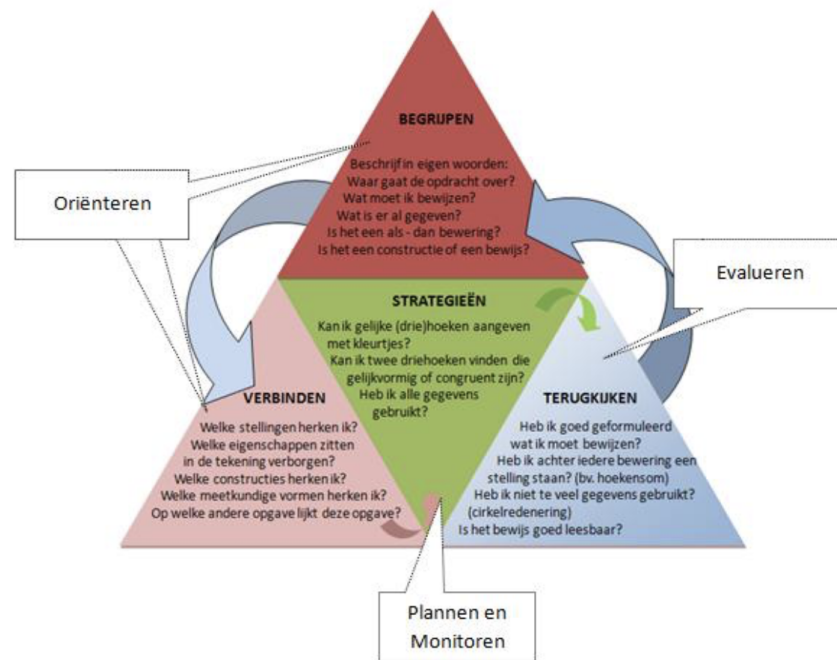


Figure 3.9: META card

[59]

### 3.4.2 High tech educational solutions

#### LTI applications

LTI stands for Learning Tools Interoperability, it is a standard for the connection between learning tools and learning platforms like Learning Management Systems (LMS) [60]. The benefit of LTI applications is that schools are more likely to use these applications, because they match the LMS that they already uses.

##### Advantages

- More likely to be accepted by schools

##### Disadvantages

- Most applications using LTI are subscription applications, financially this could be an objection

#### TELT solutions

The University of Twente has a team that is specialized in helping teachers find solutions to their educational challenges. The team is called TELT, which is an abbreviation for Technology Enhanced Learning and Teaching [61]. On the site of the team they promote several applications that they tested and approved as a solution

to educational challenges. Interesting tools for this research are; Eureka, FutureLearn, and Canvas.

**Eureka** Eureka was previously known as Mentorix, it is an application that facilitates blended learning, integrated use of multimedia and social media, and intuitive course building [61]. The TELT team however has stopped this pilot, because the functions are also covered by Canvas, and Canvas is currently the official LMS of the University of Twente [61]. Eureka uses analytics to show the student their progress with the learning goals in relation to other students. The application combines analytics with gamification [62]. In figure 3.10 a student view is shown of the analytics and the benchmark of the class. Next to presenting the results as grades the application uses a spider chart to show how the student achievements on different topics. By showing the progress of the student in comparison to the other students a sense of community is created [62].

For the communication between students and the teaching staff Eureka has two features. The first is called Communities, these are a form of discussion boards. The team of Eureka mentions that discussion boards could be seen as outdated, but they believe that the discussion boards would be more effective if they have an interface comparable to social media [62]. The second feature is the Social Hub, as mentioned before the Eureka team has taken the interfaces of social media as an example for communication. In the Social Hub several social media channels are connected in such a way that communication and sharing between teachers and students can be done through cross-channel communication [62].

#### Advantages

- This application integrates several communication-channels which can be helpful to stimulate the asking of questions via a discussion board or social media
- The analysis of the student results can be a solution for lagging students, if the student become aware of their progress compared to the rest of the class it could stimulate them to work harder to get to the same exercises as the rest
- Sense of community

#### Disadvantages

- See disadvantages of discussion boards, the last hi-fi educational solution

**FutureLearn** FutureLearn is a MOOC<sup>2</sup> platform. The platform engages the learner in online learning activities, this form of learning is called social learning [61]. On

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<sup>2</sup>Massive Open Online Courses

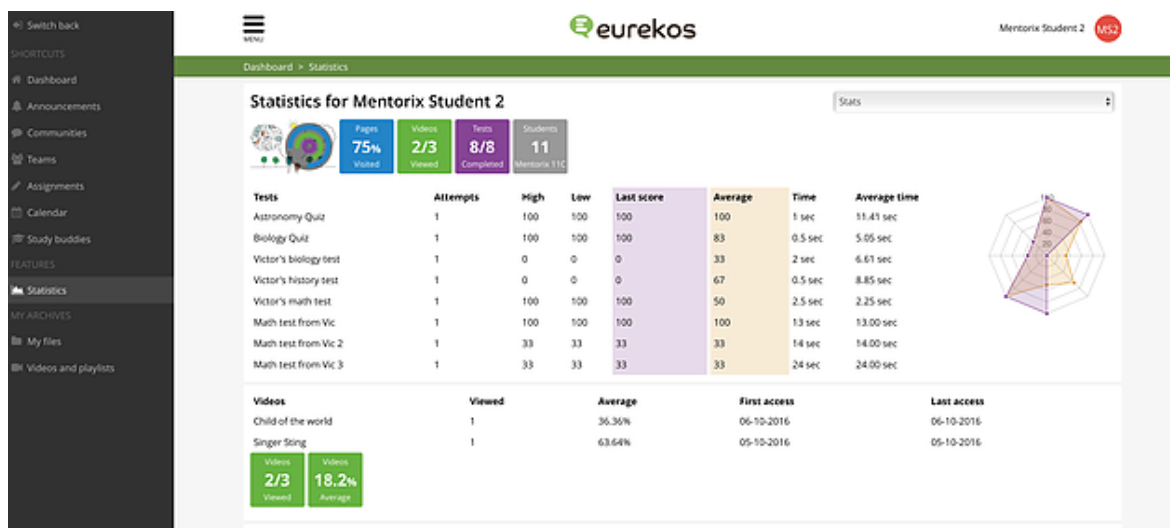


Figure 3.10: EurekaOS, student view of their results and the benchmark of the class [62]

the platform students can join free courses in an online environment. The social interaction is done via discussion platforms, commenting on each other and by following other people [63]. The courses in FutureLearn are based on the principals of effective learning. The course include storytelling, discussions, visible learning, and online community support [63].

#### Advantages

- This platform works online, therefore the questions and answers in their tutorials are also dealt with online, this could be used.

#### Disadvantages

- The TAs mentioned that they did not want to answer every question online, because they think it will take more time to write out the answer in comparison to face to face help, see appendix M.

**Canvas** At the start of the academic year of 2018/2019 the University of Twente switched from Blackboard to Canvas. Canvas is a LMS where teachers can create courses and add participants. The system has in terms of collaboration, self study and tutorials the following features that are of interest to this research; conversations, discussion platform, conferences, chat, and groups. Canvas is able to incorporate other learning tools that have a LTI connection to Canvas. Conversations is the messaging tool within canvas that eliminates email between users of the same course, as they can now converse within Canvas. The discussion platform is used for interactive conversations between several people of the same course. The discussion platform can be used as a forum, but also as an assignment by giving a grade to the users in the discussion [64]. When a group needs to converse in

real time the conference tool can be used. Another real time communication tool in canvas is the chat feature. When a teacher wants the students to collaborate on assignments groups can be made within canvas, the students can then share and work within that group environment [64].

#### Advantages

- Every student has access to Canvas
- Students are familiar with LMS's
- The chat function of the LMS could be used to give answers to short questions of students during the tutorial.
- The discussion board could be used for frequently asked questions
- The groups could be made to have students help each other solve their questions and assignments

#### Disadvantages

- The same disadvantage as the application above, that the TAs do not want to answer questions online
- Disadvantages of a discussion board
- The conference feature is not needed during tutorials, because the TA will be available in person

### **TA-HelpMe**

A solution to the hand raising problem that was designed by a Computer Science student of the University of Twente is a web application called TA-help.me. Several teachers mentioned TA-HelpMe in their interviews, they explained how TA-HelpMe solved the hand raising problem in their tutorials. The web application works with lists, that are created by the teacher or the TA. The students can then add themselves to the lists. The help is then given to the students in a first-in-first-out (FIFO) order. The titles of the lists varied in each course, they even varied between different tutorial rooms of the same course. Examples of lists titles are:

1. Questions
2. Sign off
3. Sign off  $\leq$  week 4

4. Questions about design

5. Programming questions

These titles show that there are two reoccurring subjects in the titles, namely Sign off and questions. TA-HelpMe was created by Aron van Harten, a student of the University of Twente, who noticed that the Computer Science tutorials lacked efficiency in terms of the queuing of who wants to ask a question. In the application the TAs can choose who they want to help by clicking a green check-sign after the name of the student. The student will then get a notification that it is their turn, and that they should raise their hand to show the TA where they are sitting. This system allows the students to add themselves to a waiting list, while they are waiting on help they can continue with other questions, or work on something else. The TAs get an overview of who is waiting the longest on help, and they can specify lists by giving them a meaningful title.

#### Advantages

- Hand raising problem, where students cannot continue to work while they wait for help
- TAs don't have to shout to find the student who is next in line for help
- Students who have waited the longest will be helped first
- Students who have solved their question on their own can remove themselves from the list

#### Disadvantages

- Inconsistency in list title names
- When several students have the same question they will be helped separately instead of together
- Students can request help without consequence, resulting in the TAs showing the waiter behavior that was mentioned in section 1.1.
- Students do not specify their questions, therefore the TAs have to make lists for every category they want to handle separately

### **Discussion board**

Internet forums have been around for a long time. Most learning management systems have included internet forums in their system often related to as discussion

board. A discussion board is a web based application that is used to publish user-generated content structured as a discussion [65]. Davies and Graff state that online discussions promote self centered learning [13]. They support this claim with the assumption that online interaction is less intimidating and that there is less time pressure when you discuss online [13]. Graff and Davis researched the relationship between the online participation and the grades of students. Students that had higher grades participated more than students with mid range grades or low grades and the students with a failing grade participated considerably less than students with a low grade. However, more participation did not necessarily result in a better grade [13], [14], [66]. The students tended to direct more posts to their tutors. The tutor directed posts resulted in higher grades, and the peer to peer posts did not affect the grades. The peer to peer posts did provide support and a sense of community. Graff and Davis claimed that the peer to peer posts might help the students to be involved and to not quit the course due to the community feeling. Ponnusamy explained that students spend more time preparing for a post on a discussion board, than they would for face to face discussions [67]. According to Ponnusamy, students feel that posts online are more public and permanent.

Next to the effect on grades, Graff and Davis found that providing a discussion board on its self does not improve the learning of the students. This was supported by the research of Ochea et al [14]. Ochea's research showed that users of a discussion board do not necessarily know the purpose and therefore use it incorrectly [14]. The instructor needs to play a big role as moderator in the discussions, to make the discussions reach their learning goals [14], [15]. In the same article it is stated that the users do not view the discussion board as a learning tool, but as a communication platform to discuss organizational issues on [14].

The advantage of using an online discussion board is that students can choose their own study time and place [68]. Further, the students are more involved, the quality of discussions is better than that of face to face discussion, and the feeling of an online community can affect students positively [13]. When the activity level is visible the teacher can intervene earlier in the course and help students get more involved [68]. Online discussions lead to high levels of cognitive engagement and critical thinking [69]. Students self reported perception of learning is higher with discussion boards [14].

Disadvantages are that online discussion boards take a lot of time from the supporting staff. Staff members read three times more messages in comparison to students [70]. In order for a discussion board to be effective the instructor needs to be involved as a initiator and a moderator of the discussions [14], [15]. Students who are new to the material semantics might find it hard to find the right discussion of advanced topics [71]. Online discussions are of less value if face to face communi-



ation is easy to arrange [14]. Students read more posts than they write, which is an advantage and a disadvantage, because some students are scared to post online because it is too permanent and public [67]. A way to help scared students post more is by making the posts anonymous. Badawy found that 30 percent of the students in that study would post more if posts were anonymous [70]. However, 15 percent of the students of the same study mentioned not to trust anonymous posts [70].

#### Advantages

- Students choose their own study time and place
- Students are more involved
- Feeling of an online community
- Monitoring the activity and intervening is easier for a teacher
- Higher levels of cognitive engagement and critical thinking
- Self reported perception of learning of the students is higher
- If all questions would be asked through a discussion board, the questions would ideally be asked and answered only once
- Students can review the questions at their own pace
- Students don't need to raise their hand to ask a question

#### Disadvantages

- The supporting staff needs to make more hours
- Supporting staff need to monitor and moderate the discussions for them to be effective
- If face to face communication is easy to arrange the online discussions have less value
- Some students are scared to post online

### **3.4.3 Do the solutions meet the requirements?**

The following table shows the solutions that were discussed in the state of the art in comparison with their meeting the requirements. The solutions were tested on how many of the requirements of section 3.3 they met. In the colored rows the requirement topics are mentioned with the amount of requirements that were stated in 3.3.

For instance "Help seeking (2)" has two requirements that need to be met, in the column the amount of requirements the technology met are stated. The whiteboard technology scores 1 out of the 2 requirements, because the technology does lower the threshold for question asking, but it does not improve the level of help seeking.

Low tech		Help seeking (2)	User requirements (6)	Hand raising problem (3)	Help giving (4)	Total
1. Whiteboard		1	2	2	2	7
2. Code of conduct dice		1	3	3	2	9
3. Paper cups		1	3	3	2	9
4. META-card		2	4	1	1	8
High tech		Help seeking (2)	User requirements (6)	Hand raising problem (3)	Help giving (4)	Total
5. Eurekos		2	1	2	1	6
6. FutureLearn		2	2	2	1	7
7. Canvas		2	2	2	1	7
8. TA-HelpMe		1	3	3	2	9
9. Discussion board		2	2	2	1	7

Table 3.1: Testing the SotA technologies on how many requirements they meet from section 3.3

### Requirement evaluation for TA-HelpMe

As can be seen in table 3.1 TA-HelpMe is the technology that meet the most requirements. The results of the testing of this technology will be discussed below. For spatial reasons the results of the requirement testing of the other technologies will not be explained.

### Help seeking

1. Does the technology improve the level of help seeking?

- No, it does not improve the level of help seeking. Students are not encouraged to ask more specific questions.
2. Does the technology lower the threshold for help seeking?
    - Yes, students can put themselves in the online queue. As was mentioned in 2.2.3 the use of online requesting for help can lower the threshold and increase the amount of questions that are asked.

### User requirements

1. Face to face interaction, because the TAs mentioned that they value this the most.
  - TA-HelpMe is made to facilitate face to face tutorials, where the TA is no longer obliged to shout the name of the student, but the web application keeps track of the queue and the TA can choose who they help.
2. Fair system, the students and TAs mentioned that the system should be fair, it should treat everyone equally.
  - The online queue is a fair system, the TAs answer the queue in a FIFO fashion. However, students can still put themselves in the queue before they have a question.
3. Share questions, several teachers mentioned that they would like the students to share questions.
  - Questions and strategies are not shared in TA-HelpMe.
4. For the students to ask better questions.
  - The requirement is not met, see previous explanation.
5. Give insights of the most occurring problems, teachers want to learn from the problems to improve their courses.
  - TA-HelpMe is still quite simple, the TAs are able to make lists, students put themselves in lists, TAs choose who they will help. Insights that can be gathered from this system are how many questions were asked and how long students were an entry in a list.
6. Give the instructions at the moment the student has the question, not earlier, not later. This was mentioned by an experienced teacher who did not want classical instructions because it would discourage students that were working at a different pace

- By asking a question when the student has one and helping every question individually this requirement is met by TA-HelpMe.

### **Hand raising problem**

1. Does the technology solve the physical constrain?
  - Yes, the students do not need to raise their hand.
2. Does the technology facilitate a fair system for help seeking and giving?
  - The FIFO queue is considered as a fair system.
3. Does the technology allow the students to continue to work while they are waiting for help?
  - Yes, students can continue to work, when a TA picks their request for help the student gets a notification that it is their turn and that they should raise their hand so the TA can find them.

### **Help giving**

1. Does the solution safe time?
  - No, the lists do not safe time, they only make a fair queuing system.
2. Does the technology facilitate delayed attention?
  - Yes, students enter a list, and then experience delayed attention, because the help giving only comes when the TA decides to help them.
3. Does the technology enable the distribution of expertise of help givers?
  - No, the TAs do not know what type of question or what subject the students in the list are busy with, so the TAs are not able to distribute expertise.
4. Can the teaching staff help students who are at the same exercise and have a question simultaneously?
  - No, it is not visible who have the same question, so simultaneous help is not possible.

## 3.5 Ideation

By expanding TA-HelpMe to fulfill the requirements that are not yet met the technology could improve the quality and efficiency of help seeking and giving.

**Features that could be added** After a brainstorm session the following features were contrived:

1. Sign off progress,
  - to keep track of the progress of the students
  - to give insight for the teaching staff
2. category entries
  - for students to specify in what category they have a question
  - for the teaching staff to be able to distribute the expertise
3. Metacognitive strategies
  - to improve the self-resolution of students
4. Group help function
  - to improve the efficiency of help
  - students can also learn a lot from solving a problem together
5. Sharing questions
  - By sharing the question students have they can learn question formulation from each other
  - By sharing questions a sense of community can occur
6. Anonymity
  - To lower the threshold for asking questions

In the following sections the SWOT analysis of TA-HelpMe will reveal the what the technology already has, what it needs and what should be taken into account, see section 3.6.2. After that the features above and the results from the SWOT analysis are analyzed in a MoSCoW analysis giving the priority of the features, see section 3.6.3. Finally, the realization phase 3.7 shows what design choices were made to realize the features with the highest priority.

## 3.6 Specification

### 3.6.1 Specification phase methods

The requirements that follow from the context analysis and are handled during the specification phase, need to be analyzed. For the general analysis of the application a SWOT analysis was done, and for the selection of the requirements a MoSCoW analysis was used. The next two paragraphs discuss the two analysis methods.

#### SWOT analysis method

SWOT stands for Strengths Weaknesses, Opportunities, and Threads of a project or organization [72]. The strengths are the internal assets that will help meet demands or fight threats [72]. The weaknesses are the assets that could be improved [72]. Opportunities are external circumstances that favor the demand, and the threads are external circumstances that influence the demand unfavorably [72]. An example of a thread are features of competitors that will favor demand to them [72].

#### MoSCoW analysis method

The MoSCoW analysis is a method to list which requirements Must, Should, Could, and Won't be expatiated. The MoSCoW method is a analysis which judges if the requirements measure up to the acceptance criteria [73]. After the analysis the requirements are listed in the following categories; must have, should have, could have, and won't have. The requirements are then realized in the same order, the must have requirements are handled first, then the should have's, if there is still time the could have's can be realized and the won't have's will not cast aside.

### 3.6.2 Analysis of TA-HelpMe

#### Design and features

In figures 3.11 and 3.12 screenshots of TA-HelpMe can be found.

As was mentioned in the description of TA-HelpMe in the State of the Art 3.4, the teaching staff can make lists and choose who they want to help. In figure 3.11a the course setup page is shown. In the course setup the teaching staff can create lists, give the course a name, and create a digital room with a name. In the digital room the lists will be shown to the students, there they can add themselves to a list. In figure 3.11a two lists are already made; "questions" and "signoff". The lists can be removed with the red X and new lists can be added in the text input field next to "add list". Lists can also be added after the room is created. Figure 3.11b shown the

room menu that teaching staff can see when they are in a digital room. In the room menu the following options are given:

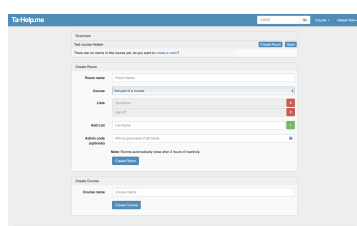
1. Projector view
2. Create an announcement
3. Create a list
4. Remove a list
5. Close room
6. Go to another room

The room code of this digital room was; "BA3GV", it can be found in the header of the page, next to the name of the room. When the page is set to projector view the code would be displayed larger, to improve the readability. Next to enlarging the room code the projector view, removes the recent block that is only relevant for the teaching staff.

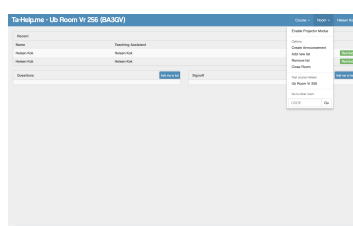
If needed the teaching staff could create an announcement that would display beneath the header to give all the users of the digital room information.

With the create and remove list the teaching staff could alter the lists of the room during a tutorial. After the tutorial was done the room could be closed, removing all the entries from the lists.

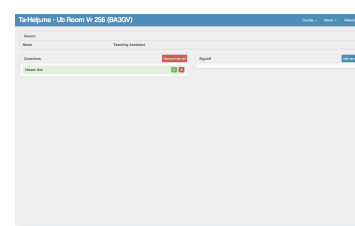
The last of the teaching screens [3.11c](#), shows the teaching staff view of the digital room. In the question list of the figure a student entry is visible, next to the entry an green and red button can be seen. The buttons next to the entry allowed the teaching staff to choose who they would help from the list. This was always done in an first in first out fashion. Above the lists the recent panel would show which students were recently helped by the TA that was logged in. The function of the recent list was to help the teaching staff if they had to keep track of the progress of students who they had recently seen, so they did not have to remember names.



(a) Course setup page



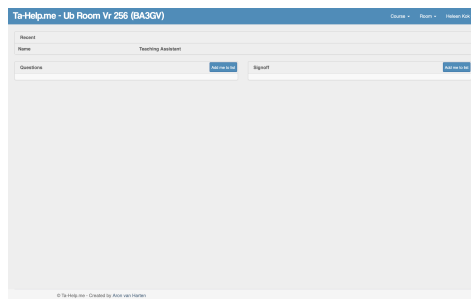
(b) Room menu



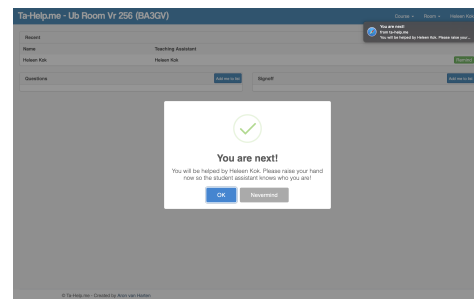
(c) Lists view

Figure 3.11: Screenshots from TA-HelpMe version 1.0, these screens can be seen by teaching staff

During a tutorial students would see the room code on the projector. They then could enter the digital room by logging in to the website and enter the room code in the text field. In figure 3.12a the student view of the digital room can be seen. By clicking the blue "add me to list" button students would be added to the list with the name that they had provided. The blue button would turn red and say "remove from list". If they wanted to cancel their entry they simply had to click the red button. When the student was selected by help givers they would receive the notification that can be seen in figure 3.12b. Students had the opportunity to accept the help by clicking "OK" and then raising their hand, or they could withdraw their help request by clicking "never mind". The "never mind" button was added, because several TAs mentioned that they went to students that did not have a question anymore.



(a) List view for students



(b) Help notification

Figure 3.12: Screenshots from TA-HelpMe version 1.0, these screens can be seen by visitors of the digital room

## SWOT analysis of TA-HelpMe

To be able to choose what should be added to the web application to satisfy the requirements a SWOT analysis was used.

### Strengths

- Simple design
- Easy to use
- Solves the hand raising problem
- Already used by the study computer science
- The FIFO help is considered fair by students
- The TAs and teachers can choose who to help next



- Students can check out of the queue if they don't have a question anymore
- It helps the TAs without adding extra work outside of the tutorials

### **Weaknesses**

- Active on a home server
- One developer
- Never evaluated, just edited by trial and error
- It is not an LTI application

### **Opportunities**

- The application can easily be expanded to fulfill more user requirements

### **Threats**

- Acceptation throughout the university, it is hard to activate teachers at the university to start using a new application
- Ownership, could be a threat in the future

## **3.6.3 MoSCoW analysis for features for TAHelpMe**

### **Context specifics**

Enough TAs is a must to be able to help the students with their questions, however if there are too many TAs they start to work for themselves and miss the students that want to be helped. A requirement of the room is enough room to walk around and to grab a chair and sit next to the students. The room in Carre was not suitable for a tutorial session, because it had too little power outlets, despite the extra power strips, and the teacher and TAs could not walk around at all, when they wanted to help a student they had to shuffle in the row to get to them and then squat next to them because there was not enough space for an extra chair. When they are not helping the teachers and the TAs sit in the front of the room. The use of the white board was a solutions to the hand raising problem, but students did not use it properly. Students cheated the system and made a mess of the white board, which made it hard to decipher who was next. In the tutorial sessions where students had to raise their hand to get help students started to lower their hand if they were not helped within two minutes.

### 3.6.4 MoSCoW

To categorize the requirements on their priority a MoSCoW analysis can be done [74]. The analysis categorizes in four categories, namely the must have, should have, could have and won't have [74]. In the following subsections the MoSCoW analysis of the stakeholder requirements is done.

#### Must have

- an intuitive design, the older teachers do not want to learn a new system, and the acceptability of an intuitive design is higher than of a tool with a steep learning curve.
- a way to categorize questions, the categorization helps the students think about what type of question they have. This helps formulate specific questions and get a higher level of help.
- a question entry, where students type out their questions. Thinking about the question the students have before they can request help has several benefits. Firstly, the student does not request help without thinking about their problem themselves. Secondly, the question will be visible for other students. This helps other students formulate their questions, and it creates a sense of community which can help students who are lagging ask questions someone else has asked before instead of giving up.
- visibility of the questions that other students asked about that category. By showing questions that were previously asked students who have a hard time formulating specific questions can see how other students ask questions and tag along to a specific question.
- a solution to the hand raising problem, students need to be able to continue to work while they are waiting for help. The prototype must solve the main problem.
- a fair system in the eyes of the student. Students mentioned in the focus group interview that they value a fair system. A fair system will be accepted better by this user group.
- give student the ability to tag along on a question of another student. This is important for students who have a hard time formulating specific questions. But this also gives the TAs the opportunity when several students have the same question at the same time to call those students to the front and help them simultaneously. This is more efficient than answering the same question

over and over again. But it also keeps in mind that only students who are at the same question have get help, so students who are not there yet or are managing to solve the problem do not get discouraged by the explanation of the TA.

- mobility the TA wants to be able to walk around without dragging their laptop with them. TAs mentioned in the focus group interviews that this was an important feature for them. This has to be included for the acceptability of the system by TAs.
- give the TAs and the teacher the ability to choose who they will help next. This in combination with the categories can improve the efficiency of help giving. When the supporting staff know what type of question is asked they can evaluate if they are the most suitable person to help the students or ask another TA if they have more knowledge about the topic.
- the system must give the student the ability to check out of the queue if they do not need or want help anymore. This is a feature that the system already has. It helps clean up the queue.

### Should have

- LTI integration with the LMS. The LTI integration increases the acceptability of the system for the university in general.
- Progress of the student, which assignments have they finished and where they are in comparison to the rest of the class. By keeping track of where the students are, the TAs can intervene sooner when someone is lagging. Further, the visualization of the students progress compared to the progress of others increases the sense of community.
- anonymity of the students. As was mentioned in 3.4.2 the discussion board section, students might be off put by the permanence and public visibility of their question and there ask less questions if the author of the question is posted with the question.
- sign off pop-up if the student has finished enough assignments. The observation of the whiteboard course and the interview with the teacher of this course led to the insight that it is better when all the students need to sign off their questions during the tutorial to have the students request a sign off after every four questions. This reduces the amount of questions that have to be signed off at the end of the session. It also prevents that TAs are occupied for a long time with students who first make all the questions and then ask for a sign off.

- insight in what problems have occurred most during that tutorial. Insights in what type of questions were asked gives the possibility to improve the course manual, to alter lectures when a certain topic is deemed misunderstood, and gives the possibility to improve the course altogether for the coming year.

### Could have

- provide insight in how much time students need per assignment. This might show what questions students find difficult.
- help students with debugging. TAs mentioned that debugging was a skill that students lacked. The system could give tips for debugging when students have a question about an error.

### Won't have

- give online the answer to the questions students have. This feature asks too much time from the TAs and is at the expense of the face to face time students get with the TAs.
- give the TAs extra work outside the tutorials. TAs are students themselves, working as a TA is a part time job, so the system should not make the TAs work outside of the tutorials.
- students uploading their code for code reviewing. TAs mentioned that they did not want to be code reviewers.

## 3.7 Realization phase

### 3.7.1 Realization phase methods

For the realization method, Scrum was used to keep on track. Scrum is a cyclical project management method, that is often used during software development [75]. The Scrum method is based on the Kanban theory. The Kanban theory has as goal to reduce production time and increase productivity [75]. A Kanban board has three stages; To Do, Doing, and Done [75]. The tasks of the project are moved to the stage there in, this keeps the progress visible and increases productivity [75]. Trello is a project management system that uses the Kanban theory in their application [75].

## 3.7.2 Feature design

### Course wide lists

The lists varied among rooms in the same course. This resulted in some rooms who did help students that had questions of week three, while in other rooms students were only helped if they had a question about week four or later weeks. During the meetings of the TAs and the teachers of the course they determined which tutorial weeks would be covered that week, and what weeks would not be helped anymore, because there was not enough time anymore, or the deadline for those weeks was already passed. Despite agreeing with each other which weeks would be covered, some rooms would still create lists that were in contrast with the agreements. This was considered unfair, because the students would not be given the same chances in the same course, depending on the room in which they were scheduled. This resulted in the design choice to create course wide lists. While setting up the course the course wide lists could be specified. The two generic subjects; Questions and Sign off, were given as standards, however the teacher could also choose to make course wide lists with different titles. This feature was not designed for the purpose of improving the efficiency or quality of help seeking and giving. However, this feature does satisfy an important user need, namely the system being fair.

### Categories

The first feature that was designed to improve the quality of help seeking is the category feature. The function of the categories is to help the students think about the type of question they have. When a students want to be added to a list they first need to choose the category that matches their help request. This engages the prior knowledge. As was mentioned in section 2.2.1 engaging the prior knowledge prepares the brain to receive help better. For instance when a student wants to be added to the question list, they click the "add me to list" button, then they need to select the exercise they were working on and subsequently choose the concept that matches their search request. By thinking about what concept matches their help request the students engage their prior knowledge. When a student wants to be entered in the sign off list, they click "add me to list" and choose what week they want to sign off. The course manager is responsible for making the categories when they set up the course in TA-HelpMe.

**Hypothesis 1: By selecting the category of their help request, students will take more time to think about what kind of help they need, resulting in an improvement in the quality of help seeking.**

The categories made the course wide lists possible, students could now specify their list entry with a category instead of the teaching staff making a list for each category. The TA now no longer needs the list that specifies "Sign off before week 4" they can see in which week the entry belongs.

An additional benefit is that the teaching staff can prepare the category before they go to the student to help with the help request. The preparing can vary from reading the exercise the student student has mentioned in their entry, to choosing to let a different TA handle the topic. This way more experienced TAs can handle the harder topics, and new TAs can help the basic topics.

**Hypothesis 2: By reading the category before going to the help request the teaching staff can prepare for the help request, this leads to a higher level of help.**

**Hypothesis 3: By distributing the experience over the categories, the teaching staff can increase the self reported efficiency of help.**

Inspired by Eureka's and the Paper cup technology the chosen categories of students will be visible in every view of the room. Eureka's and the Paper cups shared the progress and the struggles the students had and that created a sense of community. By sharing the category of the entry students can see that other students struggle with the same question. If the weeks are a category the students can see if they are on schedule compared to other students, this sense of community might motivate students.

### Typing the question

**Frequently asked questions** The feature to type out questions, was designed due to the results of the interviews with the teachers. The question "What happens when several students have the same question?" was leading for the design of this feature. One of the teachers mentioned that he gave the explanation over and over again on purpose. This was a really experienced teacher who had a good reason for doing so, namely the students do not work at the same pace. Some students are more experienced in programming and will be at the more advanced questions, the teacher mentioned that he did not want to distract and bore these students with a general explanation of a frequently asked questions. Other students that he did not want to disturb, were the "lagging" students who were not yet at the frequently asked question. He did not want to discourage the "lagging" students by giving an explanation to a question that they had not yet read. He also mentioned the worst case scenario; the students who were working on the frequently asked question, but

had a different approach than the teacher. According to the teacher these students would stop and listen to the general explanation, then doubt their own approach, and eventually stop thinking and take on the approach of the teacher. This was the worst case in the eyes of the teacher, because programming can be done in many ways, and the solutions can be found via various approaches. When students stop their approach, they will not trust their own insights the next time.

**Learn from each others question** In order to make the helping of frequently asked questions more efficient, the following feature was designed: group-help function. This function will be explained in the next section. In order for this function to work the students needed to enter their question into the online application. In the course setup the teacher could choose if a textual entry was mandatory for a list. The students would start by clicking on the button to add themselves to the list, then they needed to specify the category of their entry, and eventually they had to type out their question or choose from the questions of other students. Several teachers mentioned that inexperienced students lacked the skill to formulate what their question was. TAs also mentioned in the focus group interviews that student would raise their hand and not know what was wrong. To stimulate the formulation of questions, and to be able to pick the same question as another student, students should be able to see the questions of other students. That students can learn from each others questions and strategies is supported by several studies [1], [11], [12].

**Hypothesis 4: Letting students read the questions other students asked at the same category will help students formulate better questions.**

**Improve the quality of help seeking** By typing out the help request, the student has to think about what they want to ask before they can get into the queue. Letting the student formulate or choose a previously written question matches the "establish a specific need for help" step of the Mercier model [27], see figure 2.4. The goal of this step is to get more specific questions from students, and to reduce the amount of help requests that are a general statement of confusion.

**Hypothesis 5: Letting students type out their question will improve the quality of help seeking.**

**Editing questions** In this design the teaching staff is responsible for editing the questions students ask. The ability to edit questions was intentionally restricted for students, because students could otherwise type something random to get into the

list and change the random statement to their question if they had a question or remove themselves when they had no question once it was their turn. This would result in an unfair queue. However, to make sure that only the good questions entered the options from which students could choose, the TA had the option to edit the questions of students that they had just helped. The system would show in the top of the screen the last three entries with their question and a button to edit the question.

### **Group-help function**

This feature can only be activated when the students have to type out their question to get on the list. When two or more students have the same question and are waiting on a TA to help them, and the TA clicks on the highest entry with this question, the TA gets the following option; help this one student, or give all the students with the same question the notification to come to the front of the room to be helped simultaneously. This way group help can be offered to students who work at the same pace. The feature reduces the amount of questions a TA has to answer, because they can help several people at the same time.

**Hypothesis 6: The group-help feature makes the helping of the TA more efficient, without boring or discouraging students who are working at a different pace.**

### **3.7.3 Design choices**

#### **Dark theme**

In the focus group interviews the TAs mentioned that they preferred to be mobile, they did not want to walk to their laptop every time they wanted to give someone help. TA-HelpMe was already responsive, therefore mobile friendly. On top of that the design choice was made to give the web application a dark theme. Google researched energy saving methods for mobile devices and found that using a dark theme saved battery [76]. Muharum supports this claim, in his research about battery saving application setting, he found that dark pixels use less power [77]. When the background of the application is set to dark pixels the majority of the pixels is dark and the application will cost less energy.



## Lists

In the figures of 3.13, the various designs for the digital room can be seen. The first figure 3.13a shows the design for the student view of the lists. In the figure several students are added to both lists, students can only see each others name and what categories the other students have chosen. Students cannot see each others question. This was purposely done, to keep the threat to self-worth low. As was mentioned in section 2.2.1, public attention can threaten the self-worth of the student and result in less help seeking [7], [8].

In the second figure 3.13b the teaching staff design of the room page is shown. Figure 3.13b shows that the teaching staff can read who has what question and which categories were chosen. Next to every name is the option to help (green button) or reject (red button) the students help request. When a student has a non-informative question TAs can choose to reject the help request, this might stimulate students to ask better questions. In the projector view the same view as the student view will be shown, minus the "add me to list" buttons. Further, the room code will be displayed in a large font just as the previous version of TA-HelpMe did.

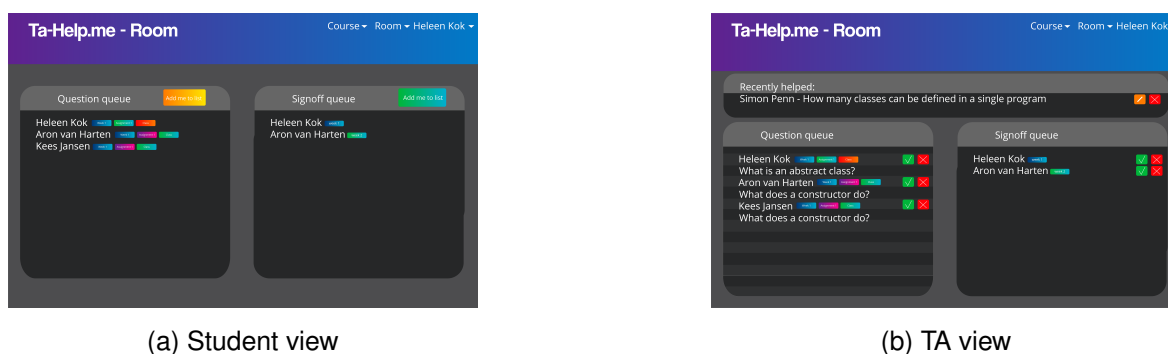
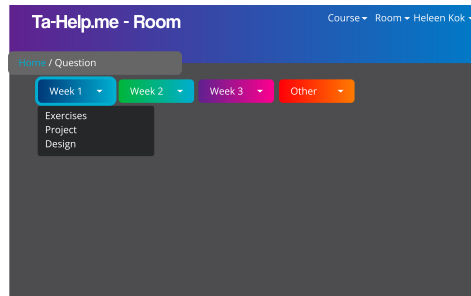


Figure 3.13: Designs for TA-HelpMe version 2.0, digital room pages

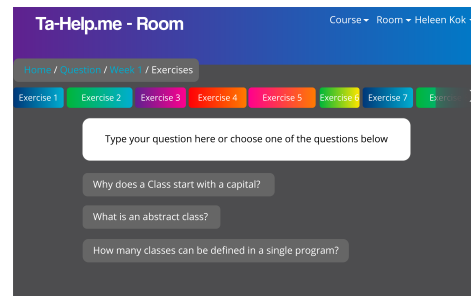
## Categories and question entry design

The following two figures show the design for the categories and question display. After clicking "add me to list" the students will be redirected to the first category page, see figure 3.14a. In this page the first category that was made by the teaching staff will be displayed. In this example the tutorials work with a weekly sign off, the first category for a question entry is therefore the week in which the students are working. After choosing what week the student is working at the student can choose the second category, in this example the type of question. After clicking the second category in the drop-down button the students will be redirected to the question page, see 3.14b. Students then see an text field where they can enter their own question and below the text field the previously asked questions in this category are

displayed. The students can choose to either write their own question or pick one. After giving their question the students are entered to the list and their screen is redirected to the room view.



(a) Questions category page

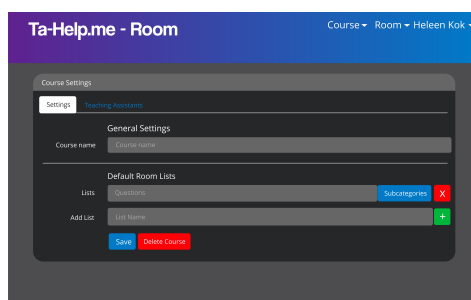


(b) Question entry

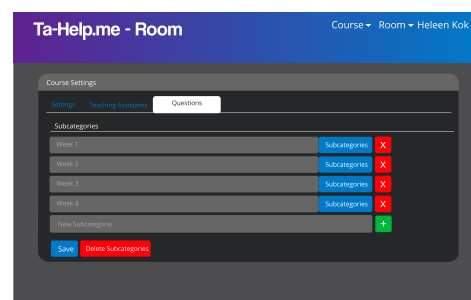
Figure 3.14: Design for the categories and question entry

## Course setup

The panel of the course setup that can be seen in figure 3.15a, deviates from the course setup of figure 3.11a. The new course setup has tabs to navigate through the various options. After entering and saving the lists for the course, the course manager can click the blue "subcategories" button. This will redirect them to a new tab where the first categories of that list can be defined, see figure 3.15b.



(a) Course setup page



(b) Course setup page

Figure 3.15: Design for the course setup pages

## 3.8 Chapter conclusions

RQ1: What are the pitfalls of programming tutorials for each user group?

RQ4: What technologies are available to improve tutorials?

RQ5: How can the available technologies be used to create a TEL solution that fits

the user needs and the MRQ? In this design chapter the human centered design cycles were run through. The main pitfalls for the user groups were that the teaching staff wanted students to ask better questions and the students wanted a fair system that managed the help requests. In the state of the art section several technologies that could be used were described. The technologies were tested if they met the requirements of section 3.3. TA-HelpMe met the most requirements and was therefore chosen to expand. Showing the progress of other students of Eureka and the Paper cups was combined in the design of the categories. The sharing of questions and strategies that was mentioned in section 2.2.1, was applied in the question entry design. The disadvantages that teachers mentioned of classical instruction during a lecture were bypassed with the group-help design, that feature allows teaching staff to gather students that have the same question and help them simultaneously. For this design solution three features were designed.

Categories; students need to specify what type of help request they have.

Question entry; students need to write their own question or choose a previously asked question of that category.

Group-help; the teaching staff can choose to let students that have the same question to come to the front so they can offer group help.

The hypotheses of the effects of the features are summarized below.

### **Feature hypotheses summarized**

1. By selecting the category of their help request, students will take more time to think about what kind of help they need, resulting in an improvement in the quality of help seeking.
2. By reading the category before going to the help request the teaching staff can prepare for the help request, this leads to a higher level of help.
3. By distributing the experience over the categories, the teaching staff can increase the self reported efficiency of help.
4. Letting students read the questions other students asked at the same category will help students formulate better questions.
5. Letting students type out their question will improve the quality of help seeking.
6. The group-help feature makes the helping of the TA more efficient, without boring or discouraging students who are working at a different pace.



# Method

In the sections below the procedures and data manipulations will be discussed. The context of the procedures is handled in sections 4.0.1-4.0.5. In section data collection the method of data collection is discussed. To get the opinion of the participants on version 2.0 questionnaires were distributed, the method of distribution and data manipulations of the questionnaires are discussed in section 4.0.7. Lastly, the TAs were asked to participate in a focus group interview for an in depth evaluation of version 2.0, the method of that focus group is discussed in section 4.0.7.

## 4.0.1 Subject selection

For the subject selection several course were considered. The criteria on which the courses were analyzed were:

- Programming in the tutorials
- Group size
- Period 2 or 3
- Are they familiar with TA-help.me

The study that had a course that met the criteria was computer science. That study had a course in the second period that contained programming tutorials for more that 300 students.

## 4.0.2 Participation

The participation in this research was based on the opt-in principal. Students of the course had worked with the web-application in previous modules, were they were not allowed to ask questions outside of the application. However, for the opt-in to

work the TAs were instructed to allow students to ask questions by raising their hands, in order for the use of the site and the participation to the research to be opt-in. The students were briefed on the opt-in procedure by an announcement on the web-application, that informed the students of the procedure and the possibility to participate in the research.

### **4.0.3 Anonymity**

The data of the students was processed anonymously. The students could even ensure their own anonymity by logging in with a nickname or an alias.

### **4.0.4 Research time**

The students would have exams after the Christmas break therefore the week before the holidays was considered as the best week to test without interfering with the students schedule. In this week three tutorial sessions were scheduled.

### **4.0.5 Study location**

The students of the course were divided over eight classrooms. Most of the classrooms were in the same building, three of them were located two other buildings on campus. Each classroom had a projector or screen available for projection. In all of the classrooms the TAs could sit behind a table designated for a teacher that faced the students. The students could all see the projector screen, in one classroom that was very narrow and long the back of the classroom had extra tv screens in order for the students in the back to be able to read what was projected.

### **4.0.6 Instructing the TAs**

During a TA meeting some instructions were given to the TAs and the teachers of the course. The extend of the research was given and what was expected of the TAs. Firstly, the research time was discussed, the TAs needed to know how long they needed to use version 2.0. Secondly, the TAs needed to change the policy that students could only ask questions via ta-help.me, because the participation was opt-in, raised hands were the standard and students could choose to use ta-help.me to ask their questions online and participate in the research. The last instruction the TAs got, was that the course rooms would be made by the research group, in order for all the rooms to be the same. The

## **Blunt study**

The TAs were not instructed on the new features on purpose. The discussion board literature that can be found in section 3.4.2, stated that the discussion boards were not being used effectively because the teaching staff did not guide the online discussions enough. In order for a discussion board to be effective the teaching staff first needed to learn how to moderate the online discussions. Therefore, the discussion board is not intuitive enough for a course to use it without instructions. The second version of ta-help.me has several new features that are explained in section 3.7.3. The features need to be intuitive for them to work without manual instructions. Hence, the blunt study, where the new features are tested to see if they improve the efficiency and quality of help seeking and giving in the selected tutorials, self supportive.

### **4.0.7 Data collection**

There were three ways of data collection. Data mining of the questions, questionnaires for quantitative data, and focus group interviews for qualitative data collection.

#### **Quality of help seeking**

The first way was data mining of the web-application, this data was used to analyze the quality of question asking during programming tutorials . The students could choose to ask a question or choose to be put in the sign-off queue. When they choose to ask a question, the students needed to specify; the week of the tutorial of which they had a question, the exercise they were doing, and type out their questions. Or if other students had already asked questions in that category the student could choose to ask their own question or pick one of the previously asked questions. All the questions were saved in a database. After the evaluation the questions were collected from the database. The questions were categorized in general questions, specific questions and errors, see section 2.2.1 for the definitions of these categories. Next to the category of the question the amount of questions in the research week were compared with the amount of questions during a regular week. This last step was done to analyze the acceptance of the new features.

#### **Acceptability and effectiveness of the prototype**

To evaluate the acceptance of the web application, the opinion of the participants about the new features and the usability of the site. There were two questionnaires, one for the students and a different version for the TAs, because both participants

had a different role and a different features in the site. The questionnaires started with some demographic questions about the participant. They were then asked if they had worked with version 1.0 before the test week. Participants who had no experience with version 1.0 did not have to answer the questions that compared the two versions.

After the comparison of the versions questions about the features of version 2.0 were asked. Most of the questions used statements and a Likert scale. The Likert scale is a scale where the respondent indicates their degree of agreement with the statement [78]. The scale is a bipolar scale with total agreement on the one side and total disagreement on the other [78]. For this study a five point scale was chosen, because research about the completion of surveys indicated that five point scales were more likely to be completed. Qualtrics the tool that was used for the questionnaires advises a three point scale, because most participants make surveys on their mobile phone and the more points the scale has, the harder it is to distinguish them on a phone [79]. However, psychometric scale users advocate using more categories [78]. The questions were grouped in topics, to reduce the cognitive burden on the subjects [80]. To get more insight in why subjects chose an answer several questions asked the subject to explain their answer in an open ended question. Even though this answer format is more cognitively demanding, this format was chosen because it results in more detailed and informative responses [80]. The survey questions of "Evaluating Discussion Boards ... Collaborative Learning Tool" [70] were used to be able to compare results with the results from that research.

For the questions about usability the questions of Web Accessibility Initiative (WAI) were used [81]. Their questions ask the participant to give a rating of the look and feel of the website. For instance how attractive the site is, and if the participant feels that the site was design with him/her in mind [81]. For these questions the likert scale, contained four categories to force the participant to pick a side.

**Distribution** The TA questionnaire was distributed via email, however at the last session a TAs was asked if they had found the questionnaire and it turned out that not all the TAs had received the link. Responding to this the survey link was then distributed via WhatsApp by that TA. During a session about 20 TAs where in the classrooms, some of the TAs did not work all the sessions. The TA questionnaire got 23 respondents.

The distribution of the student survey started at the beginning of the second session. The survey for the students was distributed via a link that was put in a header announcement in the site. Though, after the session only 28 of the 300 students of the course had responded. Wherefore, the module coordinator was mailed if he could spread the link to the survey on the Canvas. After sharing the link



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in an announcement on Canvas 144 students started the survey and 102 completed the questionnaire.

### **Focus group interviews**

The method of these focus group interviews was the same as the method that is described in section 3.1.1. The difference was the purpose statement for this group which was; To get the opinion of the subjects about version 2.0. Because the purpose of this interview was different the questions were also different. The moderator guide for these interviews can be found in appendix K.

### **Tools**

#### **Needs more explanation, about the functions and used for...**

- MaxQDA, coding of transcripts
- Qualtrics, online questionnaire tool, professional appearance are taken more serious [80]

### **4.0.8 Data manipulations**

Data from the Likert scale were reduced to accepted versus rejected by combining all agree and disagree responses and looking at the mean of the responses. A Chi-square test was then performed to see if the combining of the categories had significant difference to be able to accept or reject the statement.

After the extraction from the database, the questions were coded, specifying which question was:

- a specific question
- a general question
- an error
- non informing entries
- if there was a question asked of just a statement of categories
- if entries were in Dutch



## Results

**Research questions** This chapter gives the results that answer RQ6 and RQ7, in chapter 6 the conclusions of these results are discussed..

RQ6: What is the user acceptability of the design solution?

RQ7: Did the design solution improve the efficiency and quality of help seeking and giving for programming tutorials?

### 5.1 Quality of help seeking

During the research week more than 170 question entries came through TA-help.me. The questions were coded using the code system that is visible in the first column of figure 5.1. In this figure the relations between the codes are stated. Figure 5.2 shows a visual representation of the same numbers. This figure clearly shows the relationship between general questions and category statements.

Code System	Non informing entry	Dutch question	No question	Category statement	Error	General question	Specific Question	SUM
<input type="checkbox"/> Non informing entry		8	2	4	35	3		52
<input type="checkbox"/> Dutch question	8				5	2	2	17
<input checked="" type="checkbox"/> No question	2			3	26	6	2	39
<input checked="" type="checkbox"/> Category statement	4		3		32	65	1	105
<input checked="" type="checkbox"/> Error	35	5	26	32		2		100
<input checked="" type="checkbox"/> General question	3	2	6	65	2			78
<input checked="" type="checkbox"/> Specific Question		2	2	1				5
<b>SUM</b>	<b>52</b>	<b>17</b>	<b>39</b>	<b>105</b>	<b>100</b>	<b>78</b>	<b>5</b>	<b>396</b>

Figure 5.1: Relations between the codes used to encode the questions are given with their respective numbers

Examples of non informing entries are:

1. help
2. .

3. ?
4. -
5. question
6. a
7. pls send help

Examples of general questions:

1. We can't figure out how to do this?
2. Can't come up with proper JML
3. JML, LinkedList, constructor, Array iteration

The third item of the general questions that are displayed above, are examples of general questions that had an category statement instead of a question. In figure 5.1 can be seen that 65 of the 78 general questions were category statements. In the figure the relationship between the errors and non informing entries, 35 percent of the errors was a non informing entry. Beneath the error category can also be seen that the total of non questions in that category was 58 percent.

Examples of specific questions are:

1. What kind of JML is needed here?
2. We don't understand the use of second argument in the isSurjectiveOnRange() method
3. How to create a new card without a constructor?

Code System	Non informing entry	Dutch question	No question	Category statement	Error	General question	Specific Question	SUM
<input type="checkbox"/> Non informing entry	52							52
<input type="checkbox"/> Dutch question		17						17
<input type="checkbox"/> No question			39					39
<input checked="" type="checkbox"/> Category statement				105		78		183
<input type="checkbox"/> Error	52		39		100			191
<input type="checkbox"/> General question				105		78		183
<input type="checkbox"/> Specific Question							5	5
<b>SUM</b>	<b>52</b>	<b>17</b>	<b>39</b>	<b>105</b>	<b>100</b>	<b>78</b>	<b>5</b>	<b>396</b>

Figure 5.2: Relations between the codes used to encode the questions are visualized in this figure

## 5.2 Acceptability and effectiveness of the prototype

From the 17th of December 2018 to January 2019, a total of 144 students and 23 TAs participated in the questionnaires that tested the acceptability and effectiveness of the prototype. Of these groups 102 students and 20 TAs completed the full survey. For more qualitative and in depth view of the acceptability and the effect of the prototype eight TAs were interviewed in two focus group interviews. The first focus group interview contained three participants and the last five. In the following sections the result from the questionnaires and the interviews are presented.

### Student results

All of the results for the students questionnaire can be found in appendix V.1. In the following sections first the acceptance of the

Accepted statements	LS	$\mu$	$\chi^2$
1. I have the feeling I am being helped quicker with the web site in comparison to tutorials that do not use TA-help.me	5	2.25	1.087E-10
2. The system seems fair to me	5	2.11	3.670E-13
3. It is unfair when the TA helps someone below me first	5	2.46	3.143E-05
4. I had the feeling that I could ask anything	5	2.31	3.143E-05
Rejected statements	LS	$\mu$	$\chi^2$
1. That my question is showed anonymously is important to me	5	3.31	0.0105443
2. I have the feeling that I am being helped quicker than with the previous version	5	3.44	0.0005462
3. The sign off categories were not useful	5	3.48	3.381E-05
4. I asked less questions that I normally do	5	3.78	6.286E-05

Table 5.1: Student acceptance results, these statements were significantly skewed to accept or reject them

### 5.2.1 Acceptance

More than 70 percent of the students would like to use ta-help.me in other tutorial sessions. Less than 3 percent did not want to use it in other sessions, and 24 percent might like to use it in other tutorial sessions. Students explained that they liked the site, because it is easy to use, it helps get them request for help and sign off, it gives a clear overview of who is next, the system is fair, that the students

gets notified when its their turn, and that they liked the categories. In table 5.1, the statements about the acceptance from the questionnaire that were skewed enough on the chi-square test to accept or reject them are presented.

As shown in table 5.1 students had the feeling that using TA-help.me improved the waiting time, in comparison with courses that do not use ta-help.me. However, they also felt that version 2.0 did not improve on the waiting time for receiving help. Concerning the questions students asked they felt that they had the opportunity to ask any question. Moreover, the student rejected statement 4 of table 5.1, so they did not ask less questions than they would normally do. The site a 3.84 as a grade on a scale from 1 to 5, this result substantiates the acceptance of site in the eyes of the students.

**Categories** The statement "I liked the categories that helped me define what type of question I had" was not significantly skewed enough to accept or reject this statement. The statement had a likert scale of five and a mean of 2.85, therefore the result was neutral, but on the positive side of the scale. In the open ended questions students elaborated that they did like the categories, especially for the sign offs, but that they disliked the amount of categories and the amount of clicks it took to get from the "i have a question" button to actually typing the question.

**Question entries** More than 60 percent of the students asks one or more questions every tutorial session via ta-help.me. During the tutorials 81 percent of the students picked a question another student had previously written. The statement; if the students had the feeling that it was hard to formulate their question (see appendix V.1 Q7), was not significantly skewed, to accept or reject that statement. And as was mentioned before students did not ask less questions that they would normally do.

Several students mentioned that the typing out of the question was redundant, because the TAs would still ask you to explain your question when they got to the students, that it was easier to explain face to face what their problem was, and that the other students did not take the question entry seriously. One student mentioned "I would change the redundancy in text you had to write. You still had to show it to the TA which didn't save you much time at all. If everyone took the question entry the way it is supposed to be used seriously it might save some time for the TAs.". Another student wrote "it is difficult to write a short version of my question", and another student mentioned "that the typing out of the question was not relevant because it was easier to explain face to face what their problem was, and that the TA would also come and help them if they did not type an elaborate question.". These quotes show that when the question entry is not taken seriously by the students and

TAs, that then the benefit of typing out the question does not outweigh the time it consumes.

**Group help** Non of the students had the same question at the same time as other students in their room during the tutorials, therefor the group help function was not tested.

<b>Usability, accepted statements</b>	LS	$\mu$	$\chi^2$
1. Overall the site is attractive	4	2.87	3.146E-05
2. The sites graphics are pleasing	4	2.70	1.662E-09
3. The colors used throughout the site are attractive	4	2.61	0.0055642
4. The typography (lettering, headings, titles) is attractive	4	2.75	0.0055694
5. Information is layered effectively on different screens	4	2.86	0.0055642
6. Information is easy to read	4	2.94	3.143E-05
7. Information is written in a style that suits me	4	2.98	3.143E-05
8. Screens have the right amount of information	4	3.03	3.143E-05
9. The site is designed with me in mind	4	2.71	0.0001996
10. The site is well suited for first-time visitors	4	3.18	3.143E-05
11. The site is well suited for repeat visitors	4	3.28	3.143E-05
12. The site has a clear purpose	4	3.31	3.143E-05
13. I always felt I knew what was possible to do next	4	2.93	3.344E-05
14. The site is mobile friendly	4	2.66	0.0003959
<b>Usability, rejected statements</b>	LS	$\mu$	$\chi^2$
1. It is easy to find my way around the site	5	1.53	0.0055642
2. My mistakes were easy to correct	5	2.10	3.344E-05

Table 5.2: Students usability results, these statements were significantly skewed to accept or reject them

### 5.2.2 Usability

Table 5.2 shows the results for the usability of version 2.0. The students felt that mistakes that they made were hard to correct. Further, they found that it was hard to find their way around the new version. However, they also felt that they always knew what was possible to do next. Of the usability questions 14 out of the 16 statements were accepted. Several students mentioned in the open question what they liked best about the site was the new dark-theme and the simplicity of the site. Several students did not like the gradients that were used in version 2.0, because they influenced the readability of the site.

## TA results

The TA results consist of the results from the questionnaire and is backed up by quotes from the focus group interviews.

Accepted statements	LS	$\mu$	$\chi^2$
1. The sign off categories in the new version where useful	5	2.00	0.000162
2. It was easy to choose to help a student	5	2.50	0.000162
3. I could quickly see what questions the students had	5	3.00	0.001616
4. I liked the categories for the questions	5	2.24	0.004677
5. I liked the categories for the sign-offs	5	1.67	2.20E-05
6. I liked the option to choose who to help from the list	5	1.95	0.000465
7. The system seems fair to me	5	2.20	0.000465
8. Giving students the option to choose a pre-written question is useful	5	2.50	0.006655

Table 5.3: TAs acceptance results, statements were significantly skewed to accept them

### 5.2.3 Acceptance

Before the site TA-help.me the TAs of this course had tried several methods to help deal with the hand raising problem. The TAs mentioned that they had used the whiteboard in several different ways, but that their main problem with the with board was that the TAs did not know who every student was, so they had to shout the name and hope for a response. Version 1.0 solved this problem for them. If version 2.0 helped the TAs help the students faster received a neutral response. The TAs did accept the statement that were in favor of the categories for questions and sign offs (see table 5.3).

**Categories** During the focus group interviews the following statements were made by TAs about the categories:

1. "I really liked that I was able to see which week people wanted to sign off without making a separate list for every week."
2. "I am convinced that the categories are valuable for us."
3. " I liked the idea of the badges, because you are kind of informed when you go to the student what the subject of their question would be. I did notice that I do use my experience with tutoring. I did not need the questions that much, I found them less useful. But when I see an exercise tag and a category tag,



I immediately see the two questions in my head that they are probably going to ask. But as I said that has a lot to do with experience, because it does not apply to every TA.”

4. “It also simplified who was going to help. Imagine, I don’t know anything about merge sort, than I could ask another TA if they wanted to help that student instead of me. Instead of going to the student and fumbling with the topic.”

**Question entries** The TAs noticed that a lot of students did not type a useful question in the question entry. One of the TAs mentioned; “It was useful to see what question a student had. It did not always work some students typed ‘help’ or ‘please send help’, but when students did type a serious question it helped me prepare before I approached them to help.”. In correspondence to the results of the Quality of help seeking, the TAs noticed that several students did not type out their question, but just made a category statement. Even though the literature mentioned that general questions, resulted in a lower level of help giving, the TAs liked the general questions, because they helped them prepare. “I could think about that topic when I was walking towards them. For instance I would think about the things that could go wrong with merge sort.” The benefits of students that asked specific questions were, that the TA was “able to help them quicker”. And one TA said the following: “I had one student who was typing out his question and when I went to him to help he said ‘Oh, yeah, I started thinking about it when I typed the question and then I figured out what I needed to do.”. The TAs observed that several students dislike the typing out of their whole question, and mentioned that they did not correct student when they just typed ‘help’ or ‘.’. One of the more experienced TAs stated “There are advantages to typing out the question, but not everyone uses it properly. People are trying to short cut the system to get as quickly as possible on the question list. The risk is that you get, frustration upon frustration. Not especially with the system, but it starts with the frustration that they are stuck with the exercise, then they need to go through the system, but if the system works against you then you get really frustrated.” Another TA only noticed a light resistance in his group toward the typing out of the question. About the role of the TA to guide the students to ask better questions the following was said “By forcing the students to type out their question, you can even, on the basis of transparency tell the student when they type ‘It does not work’ that the student needs to be more specific the next time. ”

Two of the TAs mentioned that students who used to ask too much of their attention, reduced the amount of help seeking with version 2.0. One TA stated: “I had one student in my group who continuously asked for help. With this version he only asks questions when he really has a question.”

When the TAs were asked if student should be able to see each others questions with the author of the question visible, the feelings of the TAs were mixed. Some of the TAs had the feeling that this might inspire students to joke around or make fun of other students. One of the TAs was afraid that students who have a hard time asking questions would stop if their name would be published with the question. The concluding statement on this topic was "It could probably have an advantage. It has pros and cons. The disadvantage is, there are a couple of students who think that they are not that good at programming. While I usually think that dont perform below average. But they have convinced themselves that they are worse than the rest. I think the disadvantage is for those people, because they may think that their question is a stupid question and that other might see it. The advantage might be, that you force the students to ask more useful questions."

**Editing questions** For the future maintenance of the question set someone needs to check the set and remove questions that are irrelevant. The TAs were asked who in their opinion should be responsible for that task. At first they agreed that the teacher would be the best choice. However, they also concluded that the teacher probably did not have time to do this, so an experienced TA was their next choice. As to, how often the question set should be edited, the TAs agreed that once a week would be sufficient and beneficial. One of the TAs mentioned an additional benefit of checking the question set once a week: "We used to discuss exercises in the TA meeting, the teacher would say 'These exercises are given this week, these are the tricky questions that students might have.' If a TA would also have the question set of the past two years available at this meeting, then you could discuss the type of questions students ask during these tutorials and how you can prepare for them."

The TAs all agreed that being responsible for the editing of the questions during the tutorial was not desirable, because it would take up too much of their time and they needed that time to help out the students.

**Group help** As was mentioned in the students results, there did not occur a group help instance during the tutorials of the research period. The TAs explained why they thought this event did not occur: "The rooms have approximately ten to twelve groups, there is a really slim chance that two groups would be at the same exercise and have the same question at the same time. If we would go back to the way we used to do tutorials with 150 students and 20 TAs in the same room, then it would occur."

However, they did see the beneficial side of the feature and could imagine courses where the group help would help them: "For instance, take module 3, that course has a couple of tutorial sessions where the content will be available online at the

beginning of the session and at the end of the session they have to be finished. Students then work at the same pace, so more chance of getting the same questions at the same time.”

**Course wide lists** By using the categories less lists were necessary. TAs mentioned that they liked the consistency of the lists throughout the rooms. They also stated that the rooms became more fair. Every TA meeting the priority of that week is determined and because TAs did not make the lists themselves anymore, they did not on the sly add the list which should not be handled anymore. Statements about this aspect:

1. “That you had course wide lists. Every room about the same layout. Because, before you had different lists for every room, and that made it hard to switch from room to room. The standardization was nice for me.”
2. “Yeah, unknowingly this new version takes away some options for the TAs by determining the content of the lists in the admin view. But that has the advantage that the lists are, much more consistent over the rooms and no more messing with the lists. Because sometimes we see in the eight rooms eight different designs for the lists. ”
3. “Sometimes we see desynchronization, when we have decided in the TA meeting that we would not discuss design questions this week, because we expect the students to be busy with programming questions during the tutorial and then you see that one room did make a design list. At that moment you are not going to say something about it, but actually we agreed to leave those out. So, they shouldn’t make that list, because you give people the impression that you are willing to handle design questions, while we had decided not to because of the planning.”

**Sign off** Because of the prioritizing of the sign off weeks, the sign off list in version 2.0 forced students to make a separate entry for every week they wanted to sign off. There were mixed feelings about restricting the amount a student could choose to sign off in one entry. The benefit of downgrading the amount of students that sign off several weeks at the end of the tutorial did not outweigh the demotivating effect the force could have. When the TAs were asked what they would adjust, they even mentioned that they would like to give students the possibility to assign themselves to several weeks when they enter the sign off list.

<b>Usability and acceptance, accepted statements</b>	<b>LS</b>	<b><math>\mu</math></b>	<b><math>\chi^2</math></b>
1. Information is layered effectively on different screens	4	2.75	0.007290
2. The site is well suited for repeat visitors	4	3.35	0.000140
3. The site has a clear purpose	4	3.35	0.000346
4. I always felt I knew what was possible to do next	4	3.00	0.001745

*Table 5.4: TAs usability results, these statements were significantly skewed to accept them*

### 5.2.4 Usability

The TAs were more critical about the design than the students. Several TAs liked the dark theme. The gradients however were not well received. Especially because the gradients were hard to read on the projector screen.

# Conclusions

In this research the first steps were taken to improve the efficiency and quality of help seeking and help giving in programming tutorials by means of a TEL tool. The tool TA-HelpMe was already a solution to the hand raising problem that was mentioned in the introduction. TA-HelpMe was expanded to improve the quality of the help seeking and giving by means of categories, typing out the question, a group-help feature, and course wide lists.

The categories were designed to help the students think about what type of question they had, as to become more familiar with the vocabulary of the course, and to engage the prior knowledge of the students. In addition the categories increased the threshold for improvident help seeking. TAs mentioned that one of the pitfalls was that students asked for help without really having thought about the problem they had. Students liked the categories. However, the amount of categories should be taken into account, as to prevent frustrating the students with too many redirections before they enter the list. The hypothesis that students would take more time to think about what kind of help they needed was not proven during this research. However, the TAs mentioned that the students who used to heedlessly ask for help did take more time before asking questions.

The design properties of the categories for the TAs were to give an indication of the type of the question the students had, to give the TAs the ability to distribute the expertise's of the TAs over the questions, and for the sign off list to decide who they would help next. TAs were positive about the categories and mentioned that they helped them help the students more efficiently. By seeing what category of question the students had the TAs mentally prepared on that topic and they declared that it helped them help the students better, this proves hypothesis 2. Inexperienced TAs mentioned that they were glad that they could now choose who to help based on the topic, because some of the programming topics were harder to explain than others, and now they were able to ask a more experienced TA to help students with questions about that topic. This improved the quality of help giving. The self

reported higher efficiency due to the distribution of expertise proves hypothesis 3 to be true.

The typing out of the questions was seen as an added value by the TAs, because when students asked a specific question they were able to give a higher level of help. However, the TAs did not intuitively decide to correct or guide the students to ask better questions. In addition most of the students did not feel the need to type out their question, they wanted to get into the waiting queue as quickly as possible. Students mentioned that the typing out of the question felt redundant, because the TAs did not support this feature properly and students who did not type out the question got help faster. The vast majority of the questions that were asked were of the levels errors, and general questions. This effect shows that the tool does not yet improve the quality of the questions that students ask. From this the following conclusion about hypothesis 4 can be made; showing the questions of other students does not effect the formulation of better questions. Further research in the moderation and stimulation of asking questions with a TEL tool need to be done.

During the testing group-help instances did not occur. Nevertheless, the TAs did like the feature, and mentioned that other courses with larger groups and less deviation work pace of the students could benefit from this feature.

The course wide lists were only registered by the TAs. The synchronization of the lists was perceived to increase the sense of fairness of the help giving in the course, as all TAs would now help the same categories of questions. Students and TAs mentioned in the requirements that fairness of the system is important to them, giving all the students the same opportunities is therefore an important feature.

To answer the research question; how a TEL solution could improve the efficiency and quality of help seeking and giving for programming tutorials, the following was discovered: Adding categories does increase the efficiency of help seeking, especially of the help giving. Moreover, the categories helped improve the quality of the help giving. Typing out the question on itself does not improve the quality of the help seeking. Additionally, showing the questions of other students does not stimulate students to ask better questions. The TA-Help-me tool was seen as an improvement of the tutorials by the majority of the students and TAs. Using technology enhanced learning tools can improve the efficiency of help seeking and giving for programming tutorials.

# Discussion and Future work

**Research questions** This chapter answers RQ8.

RQ8: What are the recommendations for future TEL tools that try to improve help seeking and giving?

## 7.1 Discussion

The testing of the prototype was done during the week before the Christmas break. During the last tutorials session on the Friday before the holiday less students attended the tutorial than the other tutorials. The timing of the testing could have influenced the amount of questions the students asked.

For the distribution of the students questionnaire the teacher of the course made an announcement on the LMS of the course. Students could have felt pressured to participate in the questionnaire and might have answered socially acceptable answers to please their teacher. However, the open question answers were quite honest, therefore it is believed that the students did not feel pressured. Another feature that might influence the data is that the gender distribution was extremely skewed to the male gender. This is a normal distribution for programming courses, but the results to these tests could differ for courses from different studies.

All the transcriptions and coding of those transcriptions were done by one individual, the interpretations of the texts could differ if it was peer reviewed.

## 7.2 Future work

There is little research about the quality of help seeking in tutorials. Especially the guiding towards higher level question asking and how students can be induced to ask more specific questions is a field that needs more attention. When this field is combined with TEL design, the following questions could be asked:

1. How can a TEL tool intuitively steer students to formulate specific questions?
2. How should TAs moderate question asking to increase the quality of the questions the students ask?
3. Do students ask more specific questions if meta cognitive strategies are given to them during the formulation of their questions?

In this research the author of the questions was only visible to the TAs. Future research, could investigate if the anonymity influences the amount and the quality of the questions that the students ask.

Several of the improvements that were advocated by the students and TAs were implemented and are now in use. The effects of these changes should be researched. One of the improvements that could lead to future research is the prioritizing of the lists. How does prioritizing influence the perceived fairness of the systems users?

This thesis provides a base for the study of the efficiency and effectiveness of tutorials using a TEL tool to support the tutorials. Recommended is more research in this field. Especially researching the amount and level of questions over a longer period of time.



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# Interview questions

## A.0.1 Introduction

Thank you for your time. The purpose of this interview is to get an experts view on tutorials. The interview will take about 30 minutes and will be processed anonymously. The results of this interview will be used to describe tutorials as they are given now and what could be improved. If you approve I would like to take notes and make an audio recording of this interview. Do you have any questions for me before we start?

Definition of a programming tutorial: In this interview a programming tutorial will be a supervised tutorial session in which students solve assignments using a programming language or tool.

## A.1 General questions about tutorials

1. How long have you been giving programming tutorials?
2. For which courses do you give programming lectures?
3. Do you work with teaching assistants?
4. Are your tutorials mandatory?
5. How large are the tutorial groups?

## **A.2 Tutorial specifics**

1. Can you describe the process of a tutorial to me?
2. What are the responsibilities of the teacher?
3. What are the responsibilities of the teaching assistant?
4. Which behavior do you expect from the students?
  - (a) How do you encourage this behavior?
  - (b) What behavior do the students usually show?
5. What are the enabling factors of a tutorial?

## **A.3 Questions and Answers**

1. What is the protocol for questions and answers?
2. Could you describe what happens when a student has a question during the tutorial?
3. How do you encourage students to ask for help when they are stuck?
4. What happens if a teaching assistant is not able to answer a question?
5. What happens if several students have the same question?
6. What happens when there is a flaw in the tutorial manual?

## **A.4 Pitfalls**

1. Have you encountered problems during tutorials in the past?
2. What have you done to prevent this problem in the future?
3. What are the main issues that determine the success of a tutorial?
4. What could be improved?
5. What is your biggest frustration considering tutorials?

## **A.5 Results**

1. What insights would you like to get from tutorials?
  - (a) What data could help you improve future tutorials/lectures?

## **A.6 Educational tools**

1. Have you ever used educational technologies during lectures or tutorials?
2. Which of the TELT solution tools have you used?
3. What features did you like?
4. What features were frustrating?

## **A.7 Wrap up**

1. Do you have any remarks or questions considering the topic?

## **A.8 Ending**

That was my last question. Thank you very much for contributing. The input from today will be processed anonymously, and after processing the audio recording will be deleted.



# Interview 01

## **B.0.1 General information**

Date: 18-09-2018, Time: 13:00-14:00, Place Zilverling

## **B.1 General questions**

Has been giving tutorials and programming lectures for quit some time. Gives these to bachelor as well as master students, and in tele-letures to students from Delft. Courses: Works with teachers assistants(TA) sometimes with groups as large as 18 TAs.

## **B.2 Tutorial specifics**

Tutorial groups can differ from small groups of 25 to over 100 students. Ideally 25 students, because then you have time to address all the students. Students tend to cluster themselves in smaller groups to work together. The TAs are usually the best students of last year. They can sometimes explain the problems better than the teachers because they are closer to the experience of learning it themselves. The teacher is responsible for the content and to support the TAs when they are not able to help the students. TAs answer the questions and grade the assignments. The most important function of the TAs is to gather feedback. How did the tutorial go, what problems did occur, can we make a questions out of the problems to give to the students next year? When a TA doesn't know the answer to a question it uses signal to reach the teacher and ask the question. Signal works the same as whats-app. The behavior that the teacher aspects from students is to be prepared. The students get assignments to make during the tutorials, often more assignments than need to be completed. The students get two months the time to finish the assignments, the

tutorials are used as work time in which they can ask questions. Sometimes other courses with weekly assignments interfere with the two months assignments, because the students will prioritize the other course. Time synchronized assignments are an option, but a problem when a student is ill. During tutorials I would like the students to ask all the show stopper questions. Meaning all the questions that disable them from completing the assignment. Future it is good when student finish the practical sessions at home, because they look at the assignments a second time and play around more.

### **B.3 Q and A**

During lectures I usually use the break for asking questions. If the questions are general and could be useful for the class I will explain them after the break. During the break only advanced students ask the questions, and the ask good questions too. But I notice that some students do not dare to ask questions. I use shake speak to let the students enter questions anonymously, this gives them the opportunity to ask the "stupid" questions. Shake speak also helps during lectures, because the question can be projected on the screen. When student drift off and look up and I am giving an answer to a question that is not connected to the slides that are projected, this can be confusing and they drift off even more. Also for video recordings it is easier to navigate through the video when the question is projected. The problem with Shake Speak is that you have to say please ask questions now, instead of the students being able to ask questions during the entire lecture. I am looking into Slide O, an app I have not used yet.

### **B.4 Pitfalls**

Beamer breaking down or signal problems. It would be nice if you could mirror the screen of the teacher or a student during a tutorial to give class instructions using the mirrored screen. However this could also discourage students to ask questions when they know this might mean that their screens gets projected to the rest. Mirroring screens would be helpful, because students often cluster to work together on assignments, they sit around a table, this makes class general instructions hard because students needs to turn around to see the screen. Another pitfall is that students did not prepare for the lecture. They still need to download software and have compatibility issues. You need to remind them or encourage them. Most of the time I use a web-app to prevent this problem. Group clustering also helps to prevent this problem, because there is always someone in the group who has a compatible

computer. What I would really like is a system in which students can see each others questions and up and down vote the questions, like reddit uses the up and down voting. What I already use are shakespeak:

1. Shake speak:
  - (a) Submitting questions anonymously in free text boxes
  - (b) checking progress with multiple choice questions
2. Discussion board
  - (a) Post questions
  - (b) Answer questions
3. Canvas
  - (a) Make an announcement for a subset

Other pitfalls that I discovered during tele-lectures, is that when the quality of the recording of the students is bad, you cannot read the facial expressions and see if the students have understood the content.

## **B.5 Results**

From the lectures of YouTube, I would like to know which recordings are most famous. I can see now when the video is viewed the most, but not which part they viewed several times. I would also like to know how much time the students needed. How much time to prepare for the tutorial, how much time working on it and to finish the total of the assignments. Further I would like to receive the questions students had.





# Interview 02

## C.0.1 General information

Date: 24-09-2018, Time: 14:00-15:00, Place: Zilverling

## C.1 General questions about tutorials

1. How long have you been giving programming tutorials?  
**About five years now**
2. For which courses do you give programming lectures?  
**Mainly Matlab, I have given a Python course somewhere along the way**
3. Do you work with teacher assistants?  
**Yes, I use two teacher assistants for my practicals**
4. Are your tutorials mandatory?  
**Yes, the students need to sign of the assignments that they get during the tutorial. There are resit sessions for the students that missed a session.**
5. How large are the tutorial groups?  
**The group usually consists of 50 students**

## C.2 Tutorial specifics

1. Can you describe the process of a tutorial to me?

**The students get in the room open their laptop and wait for the teacher to mention which assignments will be addressed. There are three supervisors one teacher and two TAs. At the start of the tutorial the teachers tells the students which exercises of the syllabus have to be made. The supervisors have a checklist with the names of the students and the assignments that have to be checked. After completing 3 to 4 questions the students apply for a check. The check is individual, the supervisor ask questions about the code to test the students comprehension of the topic. When the comprehension is sufficient the assignments gets checked.**

2. What are the responsibilities of the teacher?

**Same responsibilities for the TAs. Question the students individually on their knowledge. Signing off the assignments.**

3. What are the responsibilities of the student assistant?

**I expect the students to have installed Matlab and to have their syllabus with them, and that they start working when the tutorial starts. Collaboration between students is allowed and even encouraged. Explaining code to each other is always good. However the signing off should be individual. We do this prevent copying and that one student does all the work and three students sit watching the good programmer do all the work. But you don't learn programming by watching.**

4. Which behavior do you expect from the students?

- (a) How do you encourage this behavior?

- (b) What behavior do the students usually show?

**You see that some students did not install Matlab, that takes a lot of time in the first session. Sometimes students are sick and miss a session. But we have repair sessions for this problem.**

5. What are the enabling factors of a tutorial?

**The students need Matlab and the syllabus, and the room needs enough power outlets.**

## C.3 Questions and Answers

1. What is the protocol for questions and answers?

**We noticed that the last hour is the busiest. We improved this by checking after completing 3 to 4 assignments. We also noticed that raising hands became a problem. Sometimes a student dropped their hand when you were looking and it took some time to help all the students so they sat with their hands raised for a long time. There was even one student who made a paper version of a hand that he could raise. We heard from other tutorials that the hand raising problem could be solved by using a white board. We will implement this this year. The students will make a group name which they can put on the board when they are ready for a sign off.**

2. Could you describe what happens when a student has a question during the tutorial?

**Students are allowed to ask questions. There is no protocol for the supervisor how to manage the questions in the room. We demand the TAs and students to ask and resolve the questions in English. Because it is easy when your are both Dutch to start in Dutch. But we decided that this is better for the foreign student so they feel valued and dare to ask questions as well.**

3. How do you encourage students to ask for help when they are stuck?

**We don't encourage them necessarily. The students are responsible for their own learning. They can ask each other questions and raise their hand if they need assistance. I have not really thought about encouraging the students to ask questions before. I do walk around and watch what the students are doing.**

4. What happens if a student assistant is not able to answer a question?

**That hardly ever happens. I am present at the tutorial and can help when the TAs get stuck,**

5. What happens if several students have the same question?

**I explain the question to each group separately. I do not explain the topics in general, because that takes more time than explaining is to the groups. What you also see is that the groups do not have the same speed in programming, so it would be hard to explain general questions at the right time.**

6. What happens when there is a flaw in the tutorial manual?

**Then I decide to take the question out of the sign off, or I adjust the flaw during the tutorial, by announcing the repair to the class.**

## C.4 Pitfalls

1. Have you encountered problems during tutorials in the past?

**If a student is sick for several tutorial sessions, it becomes a problem. I am afraid that a student will announce that they have signed off of the assignment but the TA did not check it on the sign off sheet.**

2. What have you done to prevent this problem in the future?

**There is one repair session, and once there were even two repair sessions for a student who missed more.**

3. What are the main issues that determine the success of a tutorial?

**When the students have signed off 95 percent of the assignments. The students need to be able to program in Matlab after the tutorials. They need to master the basics. We try to achieve this by giving a lot of small assignments. By repetition we want to help the students who are weak at programming to get comfortable with the topics we address.**

4. What could be improved?

**I am content with the way we work right now. We do not have a big assignment, only the small assignments that need to be passed. The syllabus could be improved.**

5. What is your biggest frustration considering tutorials?

**Four hours per session is a long time. I notice that I have to drink enough, otherwise I lose my voice half way through. My biggest frustration is that students did not download Matlab.**

## C.5 Results

1. What insights would you like to get from tutorials?

**I would like an application where the students could sign on that they want to sign off. It would be nice if they could see where they are in the queue, what groups are signing off right now, and what groups have been helped all ready.**

(a) What data could help you improve future tutorials/lectures?

**I would like to show on the beamer, group 3 is ready for sign off. I don't know if I would like the sign off sheet to be digital. That would mean that the TAs need to walk around with a device that can access the sheet all the time.**

## C.6 Educational tools

1. Have you ever used educational technologies during lectures or tutorials?

**No, I have taught about using an app to solve the raising hands problem. But I learned from colleagues that in a group of 50 students there will be a max of 20 groups and those can use group names and the board to say that they want to sign off.**

2. Which of the TELT solution tools have you used?

**Canvas, explain everything, and good reads**

3. What features did you like?

**I use explain everything as an overhead projector. Good reads, is for report feedback of students that I mentor.**

4. What features were frustrating?

## C.7 Wrap up

1. Do you have any remarks or questions considering the topic?

**I would like to know if other teacher notice if their students also flight behavior, because they think of themselves as not good enough. Do other teacher see this as well. I am also interested if written exams work for other teachers, why they choose for written exams.**



# Interview 03

## D.0.1 General information

Date: 26-09-2018, Time: 11:30-12:30, Place: Zilverling

## D.1 General questions about tutorials

(a) How long have you been giving programming tutorials?

**Since 2012 officially, so over 6 years now.**

(b) For which courses do you give programming lectures?

- **introduction to computer science**
- **Algorithms**
- **Creative Technology the programming courses in module: 1, 4, and 6**
- **I help at the tutorials during the first and second module of computer science**

(c) Do you work with teacher assistants?

**Yes, there are TAs at all the tutorial sessions**

(d) Are your tutorials mandatory?

**Most of the tutorials are not mandatory, except for the sessions where the students need to sign off their assignments**

(e) How large are the tutorial groups?

**The creative technology group contains 100 students which we have split into two tutorial groups of 50. You do not want the groups to**

be too small, because then you need more sessions, and to explain everything several times.

## D.2 Tutorial specifics

(a) Can you describe the process of a tutorial to me?

The students get a syllabus with assignments and instructions. During the lecture I explain the important topics for that week and what we expect from the students. It is expected that the students work independently on the assignments and their project. They can ask the TAs questions. Of the three available hours the students need to work for two hours on the assignments and for one hour on their project. The assignments are not mandatory and the students can choose to sign them off in the first three weeks, to get feedback. In the fifth week there is a mandatory tutorial in which they have to sign off and defend their work. The creative technology students are allowed to work in pairs, sometimes in groups of three, but no more than three students in a group. The difference with computer science is that they have mandatory sign off sessions every week in which they need to sign off two to three assignments. The ambiance is more structured and more rigid. The computer science tutorials are lead by TAs alone, and have a FIFO system for signing off.

(b) What are the responsibilities of the teacher?

In the creative technology sessions there is always a teacher present, they walk around to help students. Every hour there is a short lecture in which the teacher explains common mistakes and pitfalls. Attending the tutorial as a teacher improves my lectures.

(c) What are the responsibilities of the teacher assistant?

Help students with their questions and handle the sign off. The student assistant is sometimes better at explaining because they have used the libraries more recently. Sometimes they make mistakes. But what you also see is that TAs are easier to approach for the students.

(d) Which behavior do you expect from the students?

I would like them to spend more time on the assignments. I do not expect them to have processing installed at the first session, because it does not take that much time. I would like the students to engage more with the TAs. That they ask more questions and tell



**what they are doing. An important part of software development is collaboration, and you can only learn that when you talk about your code.**

i. How do you encourage this behavior?

**By giving the students practice material, and in the lectures I mention the general problems that we saw in the tutorial.**

ii. What behavior do the students usually show?

**The questions that the students have are targeted on details rather than specific problems. They have a hard time to describe their problems. In the first week the first years students are still eager to learn, but have a high school mindset, they wait till their told what to do. After a couple of weeks they want to know what is mandatory and during the fourth week they have the "I am not obligated to do anything, so I won't do a thing" mindset. I also noticed that students have a hard time asking each other for help and showing what they have done to solve a problem. When there are TAs and teachers in the room, they would rather ask them than try to figure out a solution with another student.**

(e) What are the enabling factors of a tutorial?

**laptops, syllabus, teachers and TAs.**

## D.3 Questions and Answers

(a) What is the protocol for questions and answers?

**Students raise their hand when they have a question. I sometimes walk around and ask students to explain what they are doing and at what assignment they are working. We do not have a protocol who should help who, the first one who sees the raised hand goes over to help.**

(b) Could you describe what happens when a student has a question during the tutorial?

**Student raises hand and waits for help. When the TA or teacher does not know the answer they contact a different TA or teacher and ask if they can help the student next.**

(c) How do you encourage students to ask for help when they are stuck?

**By walking around, watching the students, ask how they are doing.**

**And by activating the TAs when they are not helping students to walk around and comment on the students work.**

- (d) What happens if a student assistant is not able to answer a question?  
**The teachers and TAs ask each other to help during the tutorial when they don't know how to solve a problem. Sometimes the solutions are not ambiguously, the TA has a different method to solving a problem than the teacher or the student, I like to show this to students to teach them that there are more ways of solving a problem. The student then needs to decide what solution they prefer and they learn to make decisions.**
- (e) What happens if several students have the same question?  
**Every hour/two hours I give a short instruction, in which I address these issues.**
- (f) What happens when there is a flaw in the tutorial manual?  
**I make an announcement during the tutorial and upload the newest manual.**

## **D.4 Pitfalls**

- (a) Have you encountered problems during tutorials in the past?  
**Depends on the group. I have seen groups where the TAs and the students were very passive. Another problem that has occurred is that the tutorial that is scheduled on Friday afternoon is attended poorly. You also see students in the tutorial that are just sitting there doing nothing, most of the time these students are insecure and think that they do not have enough knowledge to be allowed to ask a question. I also have seen students that came to the tutorial, but started working on entirely different things.**
- (b) What have you done to prevent this problem in the future?  
**The last problem we solved by mentioning in the first lecture that the attendance is not mandatory and if they want to do something different they should do it somewhere else. I encourage the TAs to walk around and talk with the students, especially with the students that appear to be doing nothing.**
- (c) What are the main issues that determine the success of a tutorial?  
**When you see the students apply the topics that they have learned. Nice projects that are creative. I also showcase some of these projects.**

(d) What could be improved?

**Student could be making more of the assignments. When students come with problems in the third week that we addressed in the first week. You see students that do not know what kind of problem they have. They are focused too much on the details instead of the program itself. That is why I have to address design in almost every lecture. And students know they can come along way with hacking instead of understanding.**

(e) What is your biggest frustration considering tutorials?

**Too little collaboration and the passive attitude.**

## D.5 Results

(a) What insights would you like to get from tutorials?

**I would really like to see the progress of the students. So the half finished programs while they are still working on them. Also signing off and uploading would be nice. I would like the TAs to be able to give the feedback online as well, because students are sometimes nervous to ask questions and they do not remember all the feedback the TA gave them during the tutorial. So for the students to be able to program online and TAs to give feedback on their code, and the students to be able to ask questions about the feedback.**

i. What data could help you improve future tutorials/lectures?

**The most occurring problems that students encounter. Analysis of half finished programs, like it to give feedback on bad variable names and design of the code.**

## D.6 Educational tools

(a) Have you ever used educational technologies during lectures or tutorials?

**Yes, I have used Kahoot, slackchannel with polls. Sometimes I use lowfi educational tools, such as printing a couple of assignments on paper, giving them to the students to solve and then discuss them after 10 min. At my previous university we used the forum and chats more often. I also used Moodle and the Big blue button there.**

(b) Which of the TELT solution tools have you used?

**I have used:**

- i. Canvas
- ii. Virtual Class in canvas, haven't used yet but I am planning to use it.
- iii. Contest
- iv. Future learn
- v. Hihaho: Interactive video
- vi. Screencast-o-matic
- vii. Other:
  - A. Kahoot
  - B. Moodle
  - C. Big Blue button
  - D. Hangout
  - E. Skype
  - F. Zoho
  - G. BlueJ
  - H. Google forums

(c) What features did you like?

**Contest is a proper working app. It does take a lot of time to design good questions. I like the interface and the contest component of kahoot, but when I want to discuss more serious questions like exam question, I use google forums. The annotation of Hihah, works quite good, I use it when I want to explain the concepts that are used in videos in my own words. A nice feature of Zoho is the ability to copy code to an iframe and that you can embed the form into your own html page. The video quality of BlueJ was good.**

(d) What features were frustrating?

**Kahoot is limited in the question type options. Sometimes it is too informal. I would further like the option to show all the questions at once, so students can practice an exam by giving the answers in kahoot, but have the ability to correct their answer and to choose which question they would like to answer first. I dislike the group size restriction in hangouts. I don't like the quality of skype, it is unreliable and you have to pay for certain features. I don't really use explain everything, I use my own camera to show what I did. Big blue button was a impractical application, it was too slow and not modern at all, but it does work and I still use it. What I disliked about BlueJ was that you had a maximum of 50 users.**

## D.7 Wrap up

- (a) Do you have any remarks or questions considering the topic?

**There are already good working peer-review apps for professional software developers. However the context and the users are different from the educational users. Professional developers are obligated to review each others work, if you would obligate students to peer review, you most likely will hear them protest.**



# Interview 04

## E.0.1 General information

Date: 27-09-2018, Time: 15:00-16:00, Place: Zilverling

## E.1 General questions about tutorials

- (a) How long have you been giving programming tutorials?  
**More than 20 years, in the beginning I had two courses, now I have seven.**
- (b) For which courses do you give programming lectures?  
**Mechanical engineering has a modeling and programming learning line, every module they have this course once a week. I give the same course in module one and two of civil engineering. I also teach the pre-master students of mechanical and civil engineering. I give a matlab course to the second year of bio medical technology.**
- (c) Do you work with student assistants?  
**Yes, always. I have a large group of mechanical engineering students that assist all my tutorials sessions. Every year I try to add 3 4 new students to the group for continuity.**
- (d) Are your tutorials mandatory?  
**No, but they do get a test about the tutorial sessions.**
- (e) How large are the tutorial groups?  
**The pre-master group is 40 50 students. The civil engineering group is about 90 students. The mechanical engineering group is my largest group, it consists of 240 students. For the tutorial sessions we split this group in two.**

## E.2 Tutorial specifics

- (a) Can you describe the process of a tutorial to me?

**At the beginning of the session I give five to ten minutes of instructions. I talk about the topics that should be addressed today and give extra explanation of the concepts. I also discuss the summary of the previous chapter, the students have this summary available in their manual, but I like to review it before we start a new chapter. Then the students should start working on their assignments. They are allowed to work together. Students have to collect the solutions of the assignments, because the solutions are never given to them, they can only collect them by making the assignments, by talking to each other about their solutions and by asking for assistance. During the exam they are allowed to use their own laptop and use the solutions that they have collected.**

- (b) What are the responsibilities of the teacher?

- (c) **I am always present at the tutorials, to help students, to give instruction, to help with questions about the manual, and to keep the students focused on the assignments.**

- (d) What are the responsibilities of the student assistant?

**Help students, and to keep students focused on the assignments.**

- (e) Which behavior do you expect from the students?

**I expect students to start working once the instructions are given. I expect them to work together to get the answers. I want them to focus on my topic during the tutorial. I expect the students to have a printed manual with them.**

- i. How do you encourage this behavior?

**When students are not working on my topic, I tap them on the shoulder and remind them on what they should be doing. If they are distracting other students with their behavior I ask them to leave the room. If the student does not have a printed manual, I refuse to help them, because the manual is filled with examples and instructions, and it is way easier to help them by pointing them in the right direction in the printed manual, then on a screen.**

- ii. What behavior do the students usually show?

**When they have an exam of a different course after my tutorial I notice that several students are busy with that course. I don't**



mind them studying for other courses in my tutorial, but I do remind them that they need the time of the tutorial to finish the assignments, because it gets hard to keep up. Sometimes students distract each other with games and video's, I remind them that this is not the intention of the tutorial and that if they do not wish to study, they should take a break or leave the room. What I also notice is that the concentration of students is low during the end of the afternoon. I get that the lectures are scheduled in the morning, but the students have a hard time keeping focused the entire tutorial session.

- (f) What are the enabling factors of a tutorial?

The printed manual is a must. They need to have a laptop with matlab installed on it. The room needs enough power outlets, especially with (pre-)master students, because they usually have an older laptop with an battery life that is low. I also need space to walk around in the room, without stumbling on the cables and to be able to watch the screens of the students and help them.

## E.3 Questions and Answers

- (a) What is the protocol for questions and answers?

We don't have a protocol of who does what. I expect the TAs to ask followup questions to the questions that the students have, to guide them to the solution. Sometimes it is easy to help a student and you see the problem right away, but sometimes it is hard to find the problem. The TA or the teachers then stay with that student until they have resolved the problem or get someone else to assist the student.

- (b) Could you describe what happens when a student has a question during the tutorial?

The student raises their hand, a TA or the teacher come to help. When the question/problem of the student is unclear, ask followup questions en watch their screen together. When a student is really close to the answer, but has been stuck on a problem for a while, we help them until they have found the solution. I have noticed that students really appreciate you when you take the time to help them find the solution. It also encourages the students to solve more assignments.

- (c) How do you encourage students to ask for help when they are stuck?  
**The students are responsible to raise their hand when they have questions. Most of the students work in groups and help each other. Some students rather work alone, they sit separate from the group, I pay extra attention to those students.**
- (d) What happens if a student assistant is not able to answer a question?  
**It hardly ever happens that they are not able to help or figure it out with the student. But when it does occur, the student asks me to help, and if there is time(no other students who need help) then the TA stays to listen to the explanation that I give to the student.**
- (e) What happens if several students have the same question?  
**With the matlab tutorials I hardly give general instructions on the question that several students have, because the students work at a different pace, so it is hard to plan when the instruction would be effective. The TAs and I answer the question for all the students separately. You do not want to break the concentration of the students that are ahead of the question or to discourage the students that are not yet at that assignment. In the programming tutorials of mechanical engineering I do use general instructions to discuss the common problems, and to walk through an example together.**
- (f) What happens when there is a flaw in the tutorial manual?  
**I make a announcement if needed. But usually I write a comment in my own manual and resolve the flaw for the coming print of the manuals.**

## E.4 Pitfalls

- (a) Have you encountered problems during tutorials in the past?  
**Textual problems with the manual, especially when we translated the manual from Dutch to English. Another problem that keeps occurring is that matlab keeps renewing itself twice a year, this obligates me to keep track of the changes that this will have on the manual and the assignments.**
- (b) What have you done to prevent this problem in the future?  
**I write a comment in my own manual and resolve the flaw for the coming print of the manuals.**

- (c) What are the main issues that determine the success of a tutorial?  
**A reasonable turnout, when the students work the whole tutorial session on the assignments. When you see that the students are have learned something or made their program work and are happy about it. Especially when they take that bit of extra time to improve a solution and the want to show off their work at home.**
- (d) What could be improved?  
**Some students don't dare to ask questions. I try to be approachable and to talk to every student. Walking around and making a comment on their work helps start the conversation. But some students are still afraid to ask questions.**
- (e) What is your biggest frustration considering tutorials?  
**When a student is stuck but do not ask for help.**

## E.5 Results

- (a) What insights would you like to get from tutorials?  
**I would like to know what the progress of the student is. So, what chapter is the student currently working on and at which assignment are they. It would also be useful to know how long it takes a student to solve an assignment.**
- i. What data could help you improve future tutorials/lectures?

## E.6 Educational tools

- (a) Have you ever used educational technologies during lectures or tutorials?  
**LaTeX slides, white board, though I prefer a traditional blackboard. However, most of the new lecture and tutorial rooms are sub-optimal, because the board are at the same spot as the projection of the lecture slides.**
- (b) Which of the TELT solution tools have you used?  
**I don't use any.**
- (c) What features did you like?
- (d) What features where frustrating?

## E.7 Wrap up

(a) Do you have any remarks or questions considering the topic?

**Yes, the rooms and their interior are important for the success of the tutorial as well.**

# Interview 05

## F.0.1 General information

Date: 02-10-2018, Time: 13:30-14:45, Place: Zilverling

## F.1 General questions about tutorials

- (a) How long have you been giving programming tutorials?  
**I have been giving workshops, courses and tutorials from 1988 till last year. So, 30 years.**
- (b) For which courses do you give programming lectures?  
**Object Oriented Systems, Object Oriented Programming, Design Patterns, Aspects of Object Programming, Voortgezet Programmeren, Concepts of Programming Languages, and workshops for companies like Philips, Thales and the government. I have given more than 150 courses.**
- (c) Do you work with teacher assistants?  
**Hardly ever. The groups used to be smaller and I only give master courses now where the group size is a maximum of 50 students.**
- (d) Are your tutorials mandatory?  
**Yes**
- (e) How large are the tutorial groups?  
**Usually between 30 50 students, but that was in the nineties.**

## F.2 Tutorial specifics

- (a) Can you describe the process of a tutorial to me?

**In the first weeks I give lectures to explain the content and the process of dealing with a requirement list. I then divide the group into smaller groups who will deal with a problem, that has a specific requirement list. Some of the sessions are interactive, we play with white boards, a ball, chains and post-its. The students together represent the program that they would make on a computer, each student being a sub-solution to one of the requirement problems. The ball is the call stack, with a post-it on the giving the instruction one method gives to the next method. This way of playing helps the students to visualize the problem and how methods interact.**

- (b) What are the responsibilities of the teacher?

**I am present at the meeting sessions, and in the interactive sessions, I play along to show the students what works and how they could improve. Once the students have started their project, I help them during meetings of about 25 minutes. The students get the time to answer questions and I ask them questions about what they have made.**

- (c) What are the responsibilities of the teacher assistant?

-

- (d) Which behavior do you expect from the students?

**I expect them to come to the meetings and to learn and to understand the concepts of the course.**

- i. How do you encourage this behavior?

**If a group has trouble with a concept, I schedule extra meetings with them. If they still don't master the concept I schedule 3 meetings a week with them until they understand it and have incorporated it.**

- ii. What behavior do the students usually show?

**Students used to protest to the mandatory tutorials, because they wanted to plan their own time and thought that I was invading their free time. However, the study climate has changed a lot most of them show up. Some students still don't show up. Some groups quarrel, or protect one student who is not participating as they should. I have also seen student who disable other students from learning. I usually tell them that they should**

**be somewhere else if they don't want to learn. I have seen that students who do not participate don't manage to finish or pass the courses I give.**

(e) What are the enabling factors of a tutorial?

-

### F.3 Questions and Answers

(a) What is the protocol for questions and answers?

**During the meetings students can ask questions, and the teacher ask questions about their program and design choices.**

(b) Could you describe what happens when a student has a question during the tutorial?

**Small group meeting, so they ask me the question directly.**

(c) How do you encourage students to ask for help when they are stuck?

**I schedule extra meetings with those students.**

(d) What happens if a teacher assistant is not able to answer a question?

-

(e) What happens if several students have the same question?

**When I notice that several groups have the same problems, I give an extra lecture to all the students of the course concerning that topic.**

(f) What happens when there is a flaw in the tutorial manual?

-

### F.4 Pitfalls

(a) Have you encountered problems during tutorials in the past?

**During the role playing with the whiteboards and the ball, if the group is comfortable with each other, they can become a bit too enthusiastic and throw the ball quite hard. This has resulted in spilled coffee mugs and I have replaced my set of tool three times now. I have also seen some sexist behavior towards girls in the past.**

(b) What have you done to prevent this problem in the future?

(c) What are the main issues that determine the success of a tutorial?

**The sexist behavior I prevented by being very clear that this behavior is not tolerated in my courses.**

(d) What could be improved?

**There should be a different approach to teaching computer science. There should be more attention to creativity and problem solving. Also a more systematic approach to solving a problem. With creativity I mean the ability to deal with typical assumptions and to criticize these assumptions.**

(e) What is your biggest frustration considering tutorials?

**There was a time when student could sue teachers for delaying their study progress, and you had to document everything to be able to defend yourself in case they would sue you.**

## F.5 Results

(a) What insights would you like to get from tutorials?

**An attendance list could be nice. Also what the students have achieved so far, could be interesting to see.**

## F.6 Educational tools

(a) Have you ever used educational technologies during lectures or tutorials?

Yes, my own suitcase with whiteboards. I also record my lectures.

(b) Which of the TELT solution tools have you used?

**None, except for canvas**

(c) What features did you like?

-

(d) What features were frustrating?

**I have a problem with the mailing features of Canvas.**

## F.7 Wrap up

(a) Do you have any remarks or questions considering the topic?

**I have a paper about how a university should be structured, it could be interesting for your research.**



# Interview 06

## G.0.1 General information

Date: 4-10-2018, Time: 13:30-14:45, Place: Zilverling

## G.1 General questions about tutorials

- (a) How long have you been giving programming tutorials?  
**five years**
- (b) For which courses do you give programming lectures?  
**Programming in C**
- (c) Do you work with teacher assistants?  
**Yes, four TAs**
- (d) Are your tutorials mandatory?  
**No, but the students are obligated to hand in there assignments in our online system. And the tutorial sessions are the only time when they can ask questions.**
- (e) How large are the tutorial groups?  
**About 100 students.**

## G.2 Tutorial specifics

- (a) Can you describe the process of a tutorial to me?  
**The course is divided in lectures and practicals. All in all there are eight day parts. The students have a manual with the assignments**

**and theory. There is also a book about programming in C, but most of the students just work with the manual.**

- (b) What are the responsibilities of the teacher?

**I do not attend the tutorials, because I give lectures for other courses during those hours. And the teacher assistants are self sufficient enough to lead the tutorials.**

- (c) What are the responsibilities of the teacher assistant?

**They help the students when they have questions.**

- (d) Which behavior do you expect from the students?

**I expect the students to hand in their work in the online environment. The system checks their work and gives the student immediately the feedback if their hand in was correct or false. Within two weeks the TA and the teacher can adjust the feedback of the system if they disagree. The students need to finish nine of the ten assignments.**

- i. How do you encourage this behavior?

**The system helps with the check off of the assignments and to show me the progress of the students. Initially it is the students own responsibility to work on the assignments and to make sure that they start on time and hand in all the assignments before the final deadline. But I check their progress and remind them in the lectures where they need to be. I also contact the TAs if a students is lagging, the TAs then address those students during the tutorial and trigger them to make more progress.**

- ii. What behavior do the students usually show?

**Most of the students are working as expected. Some lag in handing in the assignments.**

- (e) What are the enabling factors of a tutorial?

**The manual, software to be able to program in C, this software takes about ten minutes to install, it is easy and simple.**

### **G.3 Questions and Answers**

- (a) What is the protocol for questions and answers?

**The students are only allowed to ask questions during the tutorial. The should not email their questions.**

- (b) Could you describe what happens when a student has a question during the tutorial?

**We use a web application in which the students can request help. The student signs in on the website and asks for help. If there are several rooms then the TA can see, in which room there are more questions. The TA chooses who they want to help and this student gets a pop-up that its their turn and that they should raise their hand. We used to write names on the white board of the room, but this was really messy and unfair.**

- (c) How do you encourage students to ask for help when they are stuck?  
**Students are paired in the first session, this way they can help each other and correct the mistakes the other doesn't see.**
- (d) What happens if a teacher assistant is not able to answer a question?  
**This has not happened because it is a very basic course and the TAs have enough experience.**
- (e) What happens if several students have the same question?  
**The TAs communicate the common mistakes to me and I address these topics in the lecture.**
- (f) What happens when there is a flaw in the tutorial manual?  
**This manual has been used for five years now, so the most flaws are corrected already. The descriptions and instructions are very precise, so the students know exactly what is expected of them. We made this manual in collaboration with the teachers of the same course in Delft. If there is a flaw and the test system fails the student than we can manually override the system and approve the students work.**

## G.4 Pitfalls

- (a) Have you encountered problems during tutorials in the past?  
**The TAs have mentioned that the classrooms are to small, we used to have about 40 students and now at the first tutorial there were not enough seats for all the students. And sign offs used to be a problem.**
- (b) What have you done to prevent this problem in the future?  
**We saw the solution that Delft had to the sign off problem and used the same principles for our own system.**
- (c) What are the main issues that determine the success of a tutorial?  
**If the student has completed all the assignments, or at least nine**

**assignments. You see that students have a different technical background. But we start these assignments with the assumption that the students have no experience at all. We have not differentiated between experiences, so the students who have experience are faster.**

(d) What could be improved?

**I am content with the way it is now.**

(e) What is your biggest frustration considering tutorials?

**The group gets too big, and the room is too small. We have a room where 96 students can sit but we have 100 students. We use the Spiegel now, but the Horst has bigger rooms. Also the Spiegel gets warm in the afternoon, which is annoying when you have to sit there for four hours.**

## **G.5 Results**

(a) What insights would you like to get from tutorials?

**I think the TA-help.me tool would be good when you have a big group. A system that would track the weekly progress of students would be nice, especially when it highlights the students that are lagging to the me and the module coordinator. And student should see their own weekly progress as well. The module coordinator can tell me when a student is lagging if the student is still attending the module.**

i. What data could help you improve future tutorials/lectures?

**It would also be nice to be able to see the questions that students ask the TAs, because that could help me improve my lectures. If the TAs and I are the only ones who see the questions than they shouldn't be anonymous. I am not a fan of showing the students all the questions that are asked, because I believe that it would be too distracting, and it would be more like a discussion forum and I don't believe those were used that much.**

## **G.6 Educational tools**

(a) Have you ever used educational technologies during lectures or tutorials?

**Yes, our own hand in system and other tools**

(b) Which of the TELT solution tools have you used?

**I have used:**

- Canvas, because I'm obligated to use it
- evasys
- socrative
- screencast, but a different version namely screenpresso
- Een voting tool

(c) What features did you like?

**I liked then results feedback from Evasys, they use a sheet with scores. Screenpresso is easy to use. I liked the adaptability from Socrative, and it is easy to use on mobile devises as well.**

(d) What features where frustrating?

**I don't really know frustrating features, but I do wonder how many students actually watch the screencasts that I have made. With our uploading system we had a problem with a student who was uploading a gigantic file to the system, the student did not get the feedback that there was probably something wrong with the file and it took the system a very long time to process the input. And we have not implemented all character sets in our system.**

## **G.7 Wrap up**

(a) Do you have any remarks or questions considering the topic?

**Yes I will take you to my colleague who knows a bit more about the TA-help website.**



# Interview 07

## H.0.1 General information

Date: 4-10-2018, Time: 15:00-15:30, Place: Zilverling

## H.1 General questions about tutorials

- (a) How long have you been giving programming tutorials?  
**Since 1989, so about 30 years**
- (b) For which courses do you give programming lectures?  
**Java, Modula, Software engineering, Machine learning, functional modulation**
- (c) Do you work with teacher assistants?  
**Yes, but only when the group is too large for me to handle on my own. When the group is between the 15 and 20 students I prefer to do it by myself, because I think the interaction is important for the learning progress.**
- (d) Are your tutorials mandatory?  
**No**
- (e) How large are the tutorial groups?  
**Group used to be around 20 students, but now I have split the groups I have in two groups of 80 students. And with machine learning we have 240 students, which we split in two groups as well.**

## H.2 Tutorial specifics

- (a) Can you describe the process of a tutorial to me?

**Students get a lab-manual with assignments, they are supposed to work in pairs on the assignments and raise their hand when they have questions. When the response to their raised hand takes too long they come to the teachers who usually sit in the front.**

- (b) What are the responsibilities of the teacher?

**Answer the questions as good as possible. Let students think about their questions. I frequently tell students to write on paper what they want to achieve. Next to helping students I check the hand-ins and grade them.**

- (c) What are the responsibilities of the teacher assistant?

**Same responsibilities as the teacher has, when they don't know how to help they can ask back-up from the teacher. TAs don't revise the work of the students.**

- (d) Which behavior do you expect from the students?

**I expect them to work seriously on the topic, to be motivated and to actively want to learn something.**

- i. How do you encourage this behavior?

**By guarantying that the students are able to pass the course when they put the effort into it. By respecting and trusting each other. By telling the students that they should not work for the grade but because they should be interested in how it works and why it works.**

- ii. What behavior do the students usually show?

**I see students who need a lot of help with the programming, while we expect them to have foreknowledge and be able to tackle the programming with ease. And I see students who are struggling with the machine learning concepts. You really need to help them with which steps they should take to solve the assignment.**

- (e) What are the enabling factors of a tutorial?

**I'd rather have a classroom that is too big than several rooms. Laptops with the correct software are important. Students need to read the book and the course material before they come to the lab session.**



## H.3 Questions and Answers

- (a) What is the protocol for questions and answers?

**We don't have a system. I have seen the system they use at computer science.**

- (b) Could you describe what happens when a student has a question during the tutorial?

**The student raises their hand, if they don't get attention they start waving. When they have questions about the homework assignments they approach me.**

- (c) How do you encourage students to ask for help when they are stuck?

**I think it is the responsibility of the student to indicate that they are stuck. They student should take initiative in their own learning process, I encourage them to use the discussion board and discuss their problems with other students. But there are still students who email me.**

- (d) What happens if a teacher assistant is not able to answer a question?

**The TA asks me or the other teacher how it works and gets back to the student. Sometimes when I am explaining a problem a TA stops and listens to how I explain it.**

- (e) What happens if several students have the same question?

**Usually the discussion board helps, when several students have the same question. Sometimes, I use the beamer and give the explanation in general, but I don't like this, because there are many ways to solve the problems that the lab assignments give. By giving an explanation of a way to tackle the problem I can discourage students who were on the right track with a different method. And some students start waiting on more hints when you give explanations, and they stop thinking. Face to face hints and help are better. Another problem with general explanation is that students don't work at the same pace.**

- (f) What happens when there is a flaw in the tutorial manual?

**I make a slide with the fix and put it on the beamer for all students to see.**

## H.4 Pitfalls

- (a) Have you encountered problems during tutorials in the past?  
**Sometimes I have the feeling that the instructions and assignments are very clear but students don't pick up the meaning. Sometimes it is just a matter of formulating the question differently. But as long as we have enough TAs it is manageable. I also dislike that I do not get to speak to all the students any more, the personal touch is gone with the group size that we have. I would rather have and give personal feedback and support.**
- (b) What have you done to prevent this problem in the future?  
**We split the group in two sessions, but to be able to do that we had to find more TAs.**
- (c) What are the main issues that determine the success of a tutorial?  
**When there is a lot of discussion between students. They shouldn't copy code, but interact with each other. I ask students when they have a question, have you asked your neighbour how he or she would solve it? Maybe a slack or whatsapp could help in supporting the discussion.**
- (d) What could be improved?  
**The feedback we can give on the lab sessions and the homework takes too long.**
- (e) What is your biggest frustration considering tutorials?  
**I like it way better than giving a lecture. But my biggest frustration is that I miss the personal contact that I used to have with students, I used to speak at least a couple of times with each student in my group, but now the group is so big that I am happy if I have spoken to at least 80 percent once.**

## H.5 Results

- (a) What insights would you like to get from tutorials?  
**The problems students cope with. And that you could coax them in the right direction. If you don't get "this" you should look at this source.**
- i. What data could help you improve future tutorials/lectures?  
**Sending in questions, I have noticed that a lot of students don't**

**ask the questions they have online. They do ask them in person, but on the discussion board they get shy. Maybe anonymity could help? I think it is important for students to be able to react to each others questions, because they can learn a lot from each other.**

## **H.6 Educational tools**

- (a) Have you ever used educational technologies during lectures or tutorials?

**Yes**

- (b) Which of the TELT solution tools have you used?

**I have used:**

- Canvas, obligated
- Kahoot
- MOOC video lectures
- Portfolio
- Contest

- (c) What features did you like?

- (d) What features where frustrating?

**I don't like that there are so many channels which I have to check for questions. I would like students to only ask them via canvas, not via email and etc.**

## **H.7 Wrap up**

- (a) Do you have any remarks or questions considering the topic?



# Interview 08

## I.0.1 General information

Date: 9-10-2018, Time: 14:30-15:10, Place: Zilverling

section General questions about tutorials

- (a) How long have you been giving programming tutorials?

**I have been teaching for over 30 years, of which 15 years of programming courses.**

- (b) For which courses do you give programming lectures?

**In the first module of computer science I give an introduction to programming week, which is really basic programming, to make the students comfortable with programming in general. I also am the coordinator of the second module of computer science. And I used to give programming one and two.**

- (c) Do you work with teacher assistants?

**Yes, always. We have a rule of thumb that for every 25 students there needs to be 1 TA.**

- (d) Are your tutorials mandatory?

**Yes, this is necessary because the students need to make a programming exam in the end and if they did not practice they will fail**

- (e) How large are the tutorial groups?

**Ideally you would want a group of 20 to 25 students. But this year we have a group of 100. The students work together in groups of at most two, because programming in a group of six does not work. For the project they are obligated to work in pairs and for the practicals they may only communicate with their project partner or the TAs.**

## I.1 Tutorial specifics

- (a) Can you describe the process of a tutorial to me?

**In our case a tutorial is a lecture session with some demonstrations in between. A practical however is more of a tutorial session that you defined. The students get a manual that describes what needs to be done.**

- (b) What are the responsibilities of the teacher?

**In the week that we have in the first module I try to be there. I think it is important for the teacher to be at at least a couple of sessions. However we have really experienced TAs and the teacher is not needed at the sessions. My responsibilities when I attend the sessions are the same as the TAs, helping out when a student needs assistance.**

- (c) What are the responsibilities of the teacher assistant?

**Helping students, signing off assignments, giving feedback to the students. When the course has too many students then the TAs will grade some of the exams, the teacher picks random exams from the TA graded exams and checks if the exams are graded properly.**

- (d) Which behavior do you expect from the students?

**I expect students to have an active attitude. I want the students to be proactive and them to search for the answers themselves. Once they get experience in finding the answers their vocabulary will grow and they will be able to help themselves even better the next time.**

- i. How do you encourage this behavior?

**I try to help the students in such a way that they will be able to help themselves next time. The TAs have had a training in which they were trained to stimulate the student to come up with the solution themselves.**

- ii. What behavior do the students usually show?

**They usually show wait-and-see behavior**

- (e) What are the enabling factors of a tutorial?

**Well defined assignments. Laptops with working software on them. We choose software that enables the student to become more productive. The TAs are necessary and knowledge and experience.**

## I.2 Questions and Answers

- (a) What is the protocol for questions and answers?

**We do not really have a protocol how to answer questions. The TAs did do a training and have learned what ways they can help the students.**

- (b) Could you describe what happens when a student has a question during the tutorial?

**When many students have a question at the same time we use the white board or an online sign in system, so the students can request help. The TA chooses who is next and helps that student.**

- (c) How do you encourage students to ask for help when they are stuck?

**Usually I try to get that from the student by asking them questions that could get them out of their deadlock. Furthermore, I try to create an ambiance that is safe and positive, so the students does not feel stupid to ask for help. And I tell students who have a hard time, that there are many students who had a hard time in the beginning, but are doing fine now, who are even TAs now.**

- (d) What happens if a teacher assistant is not able to answer a question?

**They often ask a different TA to help. The assignments are very basic and have a solution set that the TAs know how to get to, so the would hardly have a problem in answering those questions. When students get stuck in the software it can develop in questions that the TA is not able to solve.**

- (e) What happens if several students have the same question?

**When I am present at the session and this happens I try to explain the problem for the whole group. However this depends on the location and if I am present at the session.**

- (f) What happens when there is a flaw in the tutorial manual?

**The flaw will be corrected on canvas immediately.**

## I.3 Pitfalls

- (a) Have you encountered problems during tutorials in the past?

**A lot of people who had their hand up at the same time. But this solves itself after a few weeks because the students will then have**

an extended vocabulary and be able to solve their questions themselves. A big problem that I have seen is the difference in programming experience. Some of them have never programmed before, and others have their own company in programming. You need to try to let the weaker programmers come along and to challenge the stronger programmers. However computer science is not mandatory in the high schools in the Netherlands, and when the students had the option to choose computer science in high school then the level of programming differs a lot between schools.

(b) What have you done to prevent this problem in the future?

**To prevent the experience gap between students we use that first week in the first module. The students with experience solve the assignment within one or two days, and the inexperienced students get a week to get adjusted to programming and to learn the right vocabulary.**

(c) What are the main issues that determine the success of a tutorial?

**When the assignments were formulated clearly for the students, the students knew what to do and learned the necessary topics. What I also find an important factor of success is if the students had fun doing the assignments and look back with pleasure.**

(d) What could be improved?

**Obligations and mandatory deadlines give an anxious ambiance and students that become panicked.**

(e) What is your biggest frustration considering tutorials?

**When students are frustrated with programming and students that lag in the assignments.**

## **I.4 Results**

(a) What insights would you like to get from tutorials?

**The appreciation of the students concerning, the sessions in general, the assignments, if they had enough and good assistance. How the students feel about these topics.**

i. What data could help you improve future tutorials/lectures?



## I.5 Educational tools

- (a) Have you ever used educational technologies during lectures or tutorials?  
**Yes, several apps and am trying new applications as well.**
- (b) Which of the TELT solution tools have you used?  
**Canvas, Trello, recording apps and more.**
- (c) What features did you like?  
**We did not have enough time left to discuss all the apps.**
- (d) What features where frustrating?

## I.6 Wrap up

- (a) Do you have any remarks or questions considering the topic?  
**No**



# TELT interview

## J.0.1 General information

Date: 17-10-2018, Time: 10:00-11:00, Place: Zilverling

(a) How long does TELT exist?

**Since 2016, so two years. We work together with CES.**

(b) Can you briefly explain what TELT does?

**The IT wanted to bring more meaningful input. There was an IT educational gap at the university. That's why educational support started working together with IT. We work on request. We work in a team and try to get all the requests at the right team member, so we help as fast as possible. We work with people from LISA, the IT and educational support members with an IT interest. As I mentioned we work on a request based system, so if someone wants to improve their educational methods. We also try to implement the learning 2020 vision of the university. However, we are not the implementation team of the vision, but we try to implement it. What do we want as an organization and what brings added value. We have four themes in which we are proactive:**

- i. Website and accessibility, we want to be more accessible for teachers, we go to the faculties and have lunches
- ii. Modern learning environment, the canvas phase 2.0 is a project where we try to improve the functionalities of Canvas. How can we utilize it better and get more out of Canvas. Another project in this theme is research of other learning environments, like Eureka. We look especially at the integrability of the environments.

- iii. Learning resources production. In particular the professionalization of video clips that are used for blended learning. These are also used for the MOOCs of the university. All the video clips are supported by our team.
- iv. Digital examination. Formative and summative testing, in the classroom and during an exam. We are now testing if we can also test skills in an exam setting, with a Matlab pilot. Further, peer assessment and other types of assessment are part of this theme.

**What we also do is look at the eduapps that are available and see if they can be useful for the university.**

- (c) How do you communicate with teachers?

**We do proof of concepts pilots. After we have proven that it works we have a couple of teachers that are enthusiastic, and the tool should be integrated into the educational line, and someone else should support this tool, because we don't have enough manpower. You see that the process stops at this point. After the proof of concept we write a blog post on our website with a review from the teachers. Sometimes we send a bundle of the posts that we made via the staff-members-portal, in the form of a newsletter. We used to do this periodically, but now we do it once in a while. Communication is a theme on which we can improve.**

## J.1 Application features

- (a) When does an application count as a TELT approved solution?

**LTI is the standard that applications use to communicate with a LMS. Educational tools know that to be successful they have to use the LTI protocol, then the app can be implemented into a Canvas or Moodle. Tools also use LTI. When we get a tool request is made by a teacher we try to find one that can be integrated in the LMS and LTI makes this very easy. The applications configurate with the LMS, the LMS is the consumer and the tool is the provider. They assign a key and a secret to each other. After conformation they can communicate. For instance "I am Piet, a student of course x" The tool will know course x has teacher Y. When the students has booked results in the tool these results can be send back to the LMS at the end of the system.**

- (b) What features/specifications do you test?

**We evaluate the tool with the teacher. I think we could ask students**

more what their wishes and ideas are. In the evaluation we ask the students, how did the system work, did it help with learning, did the technique an obstruction? And the teacher evaluation is posted on the website with the tool solution. This helps other teachers to see what their colleagues think about the tool.

- (c) Which requirements should I take in to account when developing an application for the UT?

**Building a nice tool isn't that hard. But when you want to build something that lasts, than you have to take into account who can support it after you are done. So the framework of the tool is important, and work together with the IT department so they can supervise the tool and make sure that the tool is transferable. Also make sure that the system can communicate with a LMS and focus on what makes it unique instead of making too much functionalities.**

## J.2 Implementation

- (a) How do you encourage teachers to make use of educational applications?  
**Teachers come to us with a problem or a request and we help them find a solution.**

- (b) What problems do you encounter during the implementation of new educational applications?

**That the technical support of the courses are too busy and do not want to take over the support that we provided during the proof of concept period.**



# Moderator guide

## K.1 Introduction

Welcome, thank you for coming. I appreciate you taking the time to assist me in this research. There is coffee, tea and stroopwafels on the table, feel free to help yourself during the interview. The bathroom is just around the corner, and you are allowed to leave the room at any time.

### K.1.1 Introducing the moderator

My name is Heleen Kok and I will be leading the discussion today. I have never been a student assistant that is why I would like your experience to help me identify how tutorials can be improved.

### K.1.2 Recording specifications

The interview will be video recorded, this to help me transcribe the interview afterward. I will be the only one to see the video, and after the transcription the recording will be deleted. During the transcribing your names will be replaced in order to keep the transcription anonymous.

### K.1.3 Contribution expectations

This interview is not a test, there are no wrong answers. I am very interested about what you think and feel. It is okay to disagree with each other, I am interested in your opinion, even when it is already mentioned. The purpose of

this focus groups is to determine your ideas and opinions to be able to pinpoint how tutorials can be improved.

## **K.2 Guidelines**

“There are a few guidelines I would like to ask you to follow during the focus group interview. First, you do not need to speak in any particular order. When you have something to say, please do so. Second, please do not speak while someone else is talking. Sometimes, the exchanges get emotional, and it is tempting to jump in when someone is talking, but we ask you to refrain from doing so. Third, remember that there are many people in the group and that it is important that we obtain the point of view of each one of you. Fourth, you do not need to agree with what everyone or anyone in the group says, but you do need to state your point of view without making any negative comments or put downs. Finally, because we have limited time together, I may need to stop you and to redirect our discussion. What questions do you have? Okay, let’s begin.” [48].

## **K.3 Introduction round**

Let’s begin with an introduction round. I would like you to introduce yourself and briefly tell us how long you have been a student assistant and what courses you have assisted. Let’s start with...

## **K.4 Definition clarification**

We are going to talk about tutorials, You are all familiar with tutorials. In your own words describe what a tutorial is.



## K.5 Discussion

Topics to discuss:

- 1 Briefly explain what happens during a tutorial.
- 2 What are your responsibilities during a tutorial?
- 3 How do you communicate with the:
  - i. students
  - ii. other student assistants
  - iii. the teacher
- 4 Are there frustrations that you encounter when assisting a tutorial?
- 5 What could be improved to the way tutorials are given?
- 6 How do you process questions from students?
  - i. How do you choose who to help?
  - ii. What do you do if you don't know the answer to the question?
  - iii. What do you do when several students have the same question?
- 7 During sign-off sessions some courses let the students write their name on the whiteboard in the room. Who has used this system? Can you describe how it works? What are the benefits and disadvantages? For the other TAs, would you like to use this system?
- 8 If there was a system in which students could submit their question and you would get a queue on the board of who is next, what should this system need for you to be able to work with is?
  - i. Should the queue prioritize students that have a question above students that want to sign off their assignments?
  - ii. If the system prioritizes should it prioritize between students who are stuck and students who have an in-depth question about an assignment?
  - iii. Should the students be able to see each others question?

## K.6 Wrap up

We are close to being out of time. I will attempt to summarize the ideas that were discussed. ... Do you agree with this summary? Are there ideas that you would like to add to the summary? It was unfortunate that we did not have enough time to discuss ... today.

### **K.6.1 Summary of the key ideas**

I will name key ideas that were discussed and would like to know from each member how they feel about this topic in a general way. I do not want to start the discussion again, just a general feeling about the topic. ...

### **K.6.2 Anonymity**

I would like to remind you that your input of today will be handled anonymously and then deleted. We ask you that you respect the right to be anonymous of each of the group members, and to abstain from discussing comments of group members.

### **K.6.3 Final questions and thanks**

Do you have questions for me? Thank you very much for your contribution and your time, I appreciate your involvement.

## Appendix L

# Coding of focus groups interviews with Teaching Assistants

The following two appendices (M and N) will include the transcription of the focus group interviews with the teaching assistants. In figure L.2 the code system of the interviews is shown in a code matrix.

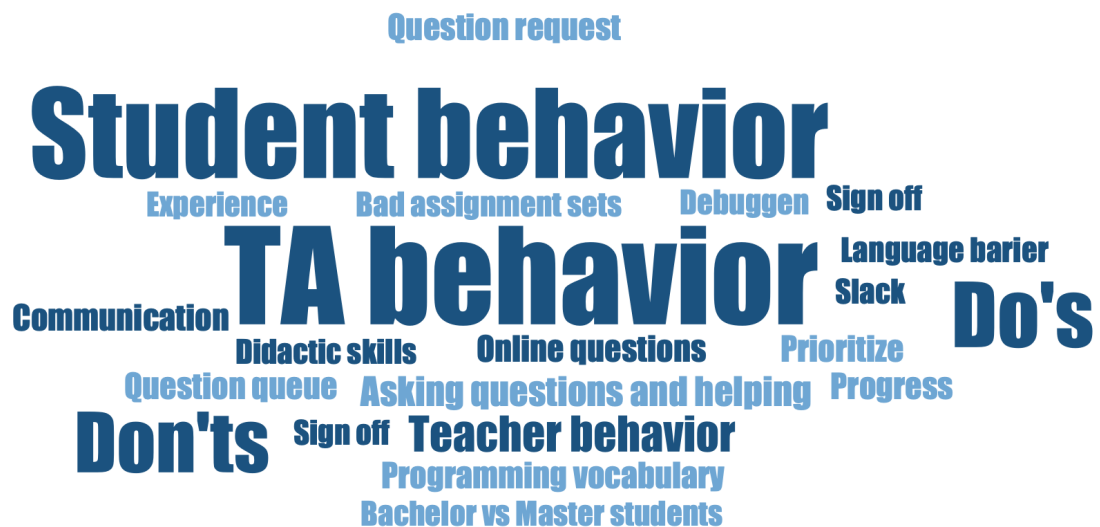


Figure L.1: Word cloud of the TA focus group





































Code System	Trans...	Trans...	SUM
Bad assignment sets	■		4
Organizational knowledge	■		1
Transcription_TAFG_2	■		758
Debuggen	■	■	4
Programming vocabulary	■	■	7
Communication	■	■	8
Didactic skills	■	■	6
Project work	■		2
Revise and check		■	1
Asking questions and helping	■	■	18
Online feedback	■	■	2
Experience		■	4
Sign off	■	■	4
Question queue	■	■	10
Prioritize		■	8
Question request	■	■	7
Sign off	■	■	6
Online questions		■	10
Example		■	2
Documentation of code		■	2
Progress	■	■	9
Reading questions	■		1
Bachelor vs Master students		■	6
Language barrier		■	4
Slack		■	6
Don'ts	■	■	118
Do's	■	■	133
Teacher behavior	■	■	42
TA behavior	■	■	235
Student behavior	■	■	211
Transcription_TAFG_1		■	417
<b>SUM</b>	<b>1.337</b>	<b>709</b>	<b>2.046</b>

Figure L.2: Code matrix of the focus group interviews with TAs

## **Appendix M**

### **Focus group interview with TAs 1**

<p>..Moderator</p>	<p>1</p>	<p>Moderator: Ik zal me even voorstellen, mijn naam is Heleen. Ik ben master student ik doe nu de master Educatie en Communicatie in de Betawetenschappen en ik wordt daarmee docent informatica. Daarvoor volg ik vakken bij HMI voor de informatica kennis en daar doe ik ook mijn afstuderen. Ik had zelf bedacht dat werkcolleges nog wel beter konden, dat daar nog wel verbeteringen in te vinden waren. Dus het leek me leuk om daar een high-fi of low-fi oplossing voor te maken. Om dus erachter te komen wat er voor alle doelgroepen van een werkcollege belangrijk is heb ik dus deze interviews en een focus groep zodat jullie met elkaar ook in discussie gaan. Als iemand iets zegt wat je misschien wel eerder hebt meegemaakt mag je daar ook je mening over geven. Er zijn geen foute antwoorden, alleen mag gezegd worden. Wc's zijn aan de overkant van de gang, mocht je naar de wc moeten, ga maar gewoon tussen door dat is geen probleem, je mag ook koffie en thee pakken tijdens het interview. Voor de opname is het belangrijk dat we niet door elkaar praten, anders kan ik er later niks meer van maken. Het is niet de bedoeling dat iedereen het de hele tijd met elkaar alleen maar eens is. Je mag echt wel on eens zijn met elkaar.</p>
<p>..Nico</p>	<p>2</p>	<p>Nico: Je moet het oneens zijn met elkaar.</p>
<p>..Moderator</p>	<p>3</p>	<p>Moderator: Nou, je moet niet het oneens met elkaar zijn, maar het is ook helemaal prima om te zeggen, ik zie dat anders, of ik heb dat zo ervaren. Maar het is ook goed om te noemen dus als er iets is waar je het mee eens bent, dat je het eens bent, zodat ik het kan opnemen hoeveel mensen het eens zijn.</p>
<p>..Leon</p>	<p>4</p>	<p>Leon: einde van zijn master is op het moment student assistent bij het mastervak ____</p>
<p>..Nathalie</p>	<p>5</p>	<p>Nathalie: bachelor afgelopen jaar afgerond nu student assistent bij bachelor vak ____</p>
<p>..Nico</p>	<p>6</p>	<p>Nico: tweede jaar van zijn master ik ben nu voor de tweede keer student assistent bij ____ dat is een eerste jaars bachelor vak en ik heb ____ gedaan.</p>
<p>..Jane</p>	<p>7</p>	<p>Jane: is een master student en helpt als student assistent bij ____ voor de eerste jaars en bij de pre-masters.</p>
<p>..Anne</p>	<p>8</p>	<p>Anne: bachelor student, ik ben student assistent bij drie programmeer vakken</p>
<p>..Moderator</p>	<p>9</p>	<p>Moderator: Gaan we naar het eerste punt en dat is beschrijf eens met elkaar wat er nu gebeurt in een werkcollege. Wat zijn je rollen? Vul elkaar daarin ook aan, dat mag. Wat denk je dat een student assistent</p>

<p>..Moderator </p> <p>Student behavior </p> <p>..Nico </p> <p>TA behavior </p>	10	moet doen en hoe gaat een werkcollege, hoe start het?	Nico: Ik ben in heel praktische vakken student assistent geweest, bij ons zijn studenten aan het programmeren als ze ergens tegen aan lopen dan vragen ze dat. In het begin is dat, moeten ze het nog leren en is het vaak heel makkelijk, op het einde ben je vaak iets langer bezig om iets uit te leggen.
<p>..Nathalie </p>	11	Nathalie: [knikt ja]	
<p>..Jane </p> <p>Asking questions a </p> <p>Student behavior </p>	12	Jane: [knikt ja] Dat is ongeveer ook hoe het bij ons gaat. Studenten zijn bezig met opdrachten en stellen vragen als ze ergens niet uit komen.	
<p>..Moderator </p>	13	Moderator: En hoe stellen ze vragen hebben jullie daar een manier of een systeem voor?	
<p>Student behavior </p> <p>..Nathalie </p> <p>Asking questions and </p> <p>Asking questions and </p>	14	Nathalie: Nee [schud nee], ze steken meestal hun hand in de lucht.	
<p>..Nico </p> <p>Asking que </p> <p>..Nathalie </p>	15	Nico: Ja [knikt ja]	
<p>Student behavior </p> <p>TA behavior </p>	16	Nathalie: Er zijn meestal 3 student assistenten bij ons en een docent die lopen gewoon rond en dan als je aan de beurt bent dan lopen ze daar gewoon heen.	
<p>TA behavior </p> <p>TA behavior </p> <p>..Jane </p> <p>Student behavior </p> <p>Sign off </p>	17	Jane: [knikt ja]	
<p>..Anne </p>	18	Anne: Bij ons hebben ze nog enkele vakken waar je nog dingen moeten aftekenen. Hoe ze dat doen is via een googleForm die ze moeten invullen, met waar ze zitten hun naam en welke opdracht ze willen af worden getekend	
<p>Student behavior </p> <p>..Moderator </p> <p>TA behavior </p> <p>..Anne </p>	19	Moderator: Hmm hmm	
<p>TA behavior </p> <p>..Moderator </p> <p>..Jane </p> <p>..Nathalie </p> <p>Sign off </p>	20	Anne: en dan komt er iemand naar ze toe.	
<p>..Leon </p>	21	Moderator: Hebben anderen ook aftekenen gehad?	
<p>Student behavior </p> <p>..Nico </p>	22	Jane: Nee [schud nee]	
	23	Nathalie: [schud nee]	
	24	Leon: [schud nee]	
	25	Nico: Ja wij hebben een online systeem en daar kunnen ze op inleveren en die test het ook automatisch, dus dan wordt het ook automatisch afgetekend.	



26

Moderator: ok

27

Anne: Bij ons wordt altijd gezegd, eigenlijk moet je niet gaan zitten je loopt gewoon rond. Vooral bij de eerste jaars die durven vaak nog geen vragen te stellen. Dus je loopt rond en vraagt Goh waar ben je nu mee bezig, dan komen ze uit eindelijk wel met o ja hier heb ik eigenlijk wel moeite mee. Op die manier trek je eigenlijk meer vragen uit de leerlingen dan.

28

Moderator: Hebben andere dat ook, of juist niet?

29

Nathalie: Nouja, ik heb wel eens mensen van dispuut bij mij die dan een paar jaar onder mij zitten en die kom je dan tegen, en dan hebben ze het niet gehaald of dan gaat het niet zo goed en dan kom je er achteraf toch achter dat ze er inderdaad geen ene pepernoot van hebben gesnapt. En dat je dan zegt, "maar waarom loop ik daar dan" en dat ze dan zeggen, "ja, maar ik durfde het niet te vragen." Ja dan vraag ik me af wat wil je dan uit zo een werkcollege halen?

30

Nico: [knikt ja]

31

Moderator: Ja

32

Jane: We hebben ook vaak, dat je moet rond lopen, maar als je langzaam heel langzaam rond loopt dan spreken mensen je ook makkelijker aan.

33

Anne: Ja [knikt ja]

34

Nico: [knikt ja]

35

Moderator: Oke, dus dat werkt. Oke.

36

Leon: Ik zit bij master vakken, ik krijg ook wel wat essentieel andere vragen, want het gedeelte dat mensen niet meer weten hoe ze moeten programmeren is wel een beetje voorbij.

37

Nathalie: [knikt ja]

38

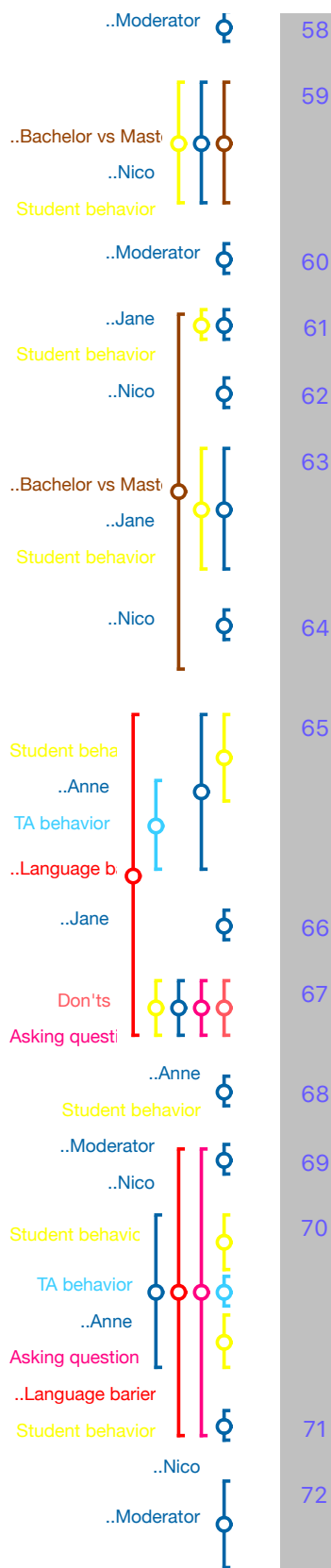
Leon: En anders als ze opzoek zijn naar een functie heb je ook niet direct het antwoord voor te klaar en kunnen ze het beter zelf op google opzoeken, want heel veel dingen zijn online goed gedocumenteerd.

39

Nathalie: [knikt ja]



Student behavior		40	Leon: Waar ik vooral tegenaan loop, is dat de studenten met een Europese achtergrond die durven wel vragen te stellen en die zijn er ook wel duidelijk in, maar bij de internationale studenten shift merk ik toch wel dat je lastiger feedback krijgt of ze het daadwerkelijk snappen of niet.
..Leon			
Student behavic			
..Language barrier			
..Nico		41	Nico: [knikt ja]
..Nathalie		42	Nathalie: [knikt ja] [glimlacht]
..Anne		43	Anne: [knikt ja]
..Moderator		44	Moderator: Hebben anderen dit ook gemerkt?
..Anne		45	Anne: Ja,
..Nico		46	Nico: Ja
TA behavior		47	Anne: Wij hebben enkele Chinese meisjes en dan is het zo van "Do you understand?" "Yes"(onzeker uitgesproken) En dan denk ik van nee, jij begrijpt het niet.
Student beha			
..Anne			
TA behavior		48	Nathalie: [knikt ja] [glimlacht]
..Nathalie			
TA behavior		49	Nico: Ik heb het ook wel bij Europese studenten, dat ik zelf denk, dit moet best logisch zijn en dan vraag je of ze het snappen en dan kijken ze je zo twijfelend aan en dan denk je van oke ik probeer het op een andere manier.
..Nico			
Student behavic			
TA behavior			
..Language barrier		50	Leon: Ja
..Leon			
..Jane		51	Jane: [knikt ja]
..Anne		52	Anne: [knikt ja]
..Nathalie		53	Nathalie: [knikt ja]
..Moderator		54	Moderator: Ja
Student behavior		55	Nico: Bij internationale is het wel vaker, moet ik zeggen, misschien omdat ze nog aan de taal moeten wennen.
..Nico			
..Nathalie		56	Nathalie: [knikt ja]
..Bachelor vs Mast		57	Nico: Zou kunnen, weet ik niet. En dan zie je ook wel een verschil tussen master en bachelor studenten.
Student behavior			
..Nico			



Moderator: welk verschil zie je dan?

Nico: Dat bachelor studenten die komen natuurlijk in een nieuwe omgeving en een nieuwe cultuur vooral ook de taal denk ik dat ze nog even moeten wennen. Master studenten zijn iets verder in hun kennis en ook in de taal.

Moderator: oke

Jane: [knikt ja] Je merkt het verschil ook heel erg bij Pre-masters ook.

Nico: [knikt ja]

Jane: Die durven het ook veel meer die zijn ook niet bang om heel veel vragen achter elkaar te stellen, dat jij dan denkt, dat ze dan bang zijn ofzo, dat jij dan denkt dat ze het niet kunnen, dat vinden zij meestal geen probleem.

Nico: nee [glimlach]

Anne: Ik vind het sowieso wel trouwens lastig met sommige internationale studenten, want die hebben totaal nauwelijks beheersing van de engelse taal. Dan zeggen ze wat en dan heb ik zoiets van "Wat zeg je?" Dat moet je dan vijf keer zeggen voordat je daadwerkelijk kan horen wat ze zeggen.

Jane: [knikt ja] [glimlach]

Anne: En dat is denk ik ook niet goed voor het durven vragen van de leerling.

Moderator: Ja

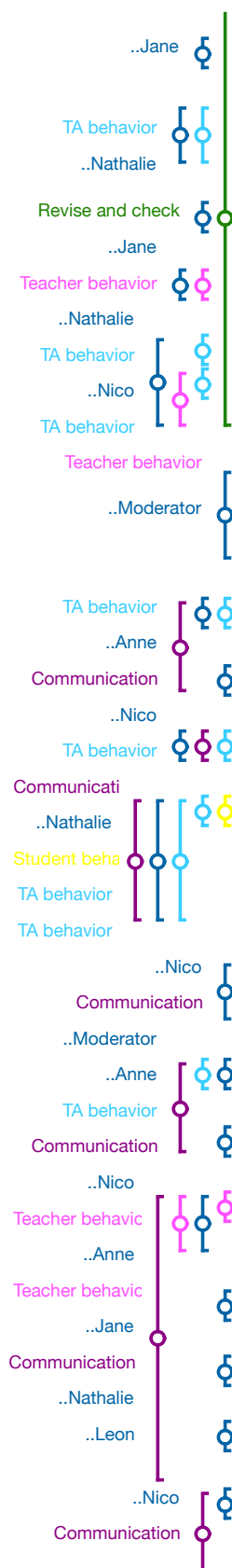
Nico: Ok, dat ervaar ik zelf niet

Anne: Ja, wij hebben vaak wel drie per jaar zitten die de engelse taal totaal niet beheersen. Die kunnen ook niet Nederlands. Dan wordt het zeg maar, met handen meer gebaren, wat niet echt zeg maar de bedoeling is en uiteindelijk zie je ze ook afvallen in het tweede jaar, omdat het gewoon niet werkt met de taal.



























Nico: Ja, [knikt ja]

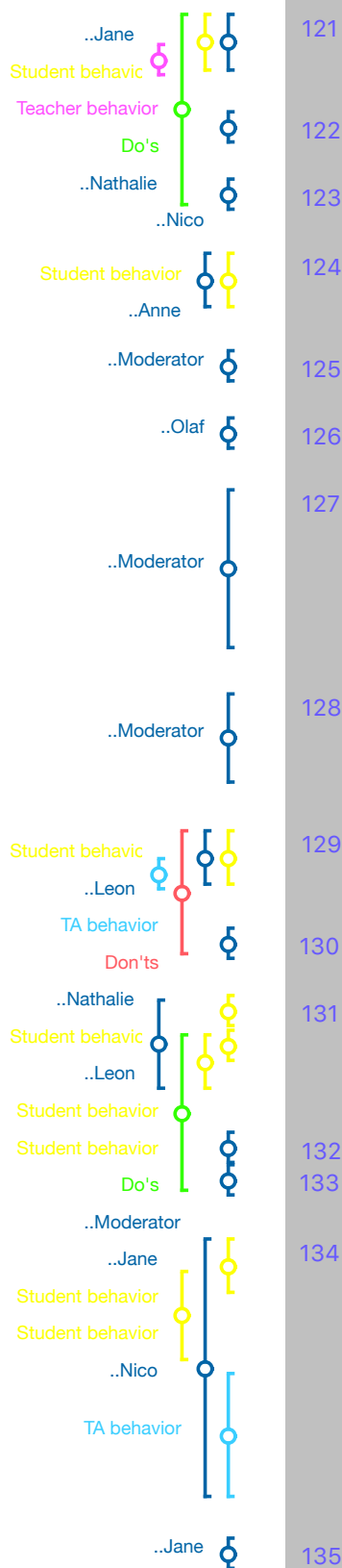
Moderator: We hebben het net al kort een beetje besproken wat je doet als student assistent, maar wat zijn nou echt de verantwoordelijkheden, wat wordt er nou echt van je verwacht?

TA behavior ..Anne	73	Anne: Zo goed mogelijk helpen
Asking questions a ..Nico	74	Nico: Ja [lachend]
TA behavior ..Nathalie	75	Nathalie: Ja, Dat je de opdrachten die ze moeten maken een beetje hebt voorbereid.
..Nico	76	Nico: [knikt ja]
..Nathalie	77	Nathalie: Dat je in ieder geval—bij meneer ___ blijven de opdrachten ieder jaar een beetje hetzelfde,
..Jane	78	Jane: [knikt ja]
..Nathalie TA behavior	79	Nathalie: dus die heb je ooit al een keer gemaakt, op een paar aanpassingen na. Dus als ik zeg voorbereiden dan dat je de opdrachten een keer hebt bekeken, van hoe ging het ook alweer?
..Nico	80	Nico: [knikt ja]
TA behavior ..Nathalie Teacher behavior Asking questions a ..Jane	81	Nathalie: En dat je dan als de studenten inderdaad vragen hebben dat je die dan kan beantwoorden, Maar mocht je tegen iets aanlopen waarvan je denkt goh hoe zat dat ook alweer? En ik weet het niet meer dan kan ik altijd aan meneer ___ “goh, zou u zo bij die student langs willen lopen?” dan is dat ook geen probleem.
..Jane	82	Jane: [knikt ja]
Teacher behavior TA behavior Teacher behavior ..Nico ..Progress TA behavior	83	Nico: Ik heb geen professor bij het werkcollege, dus bij ons is het ook een beetje de communicatie vanuit de professor naar de studenten als het nodig is met de praktische opdrachten. Want hij houdt wel de voortgang van de studenten in de gaten, omdat dat natuurlijk allemaal online kan. Dus soms zijn er studenten die een beetje achterlopen die moeten dan extra getriggerd worden of even naar gekeken worden, en dat is ook die communicatie. Dus dat is een (inaudible).
..Moderator	84	Moderator: Moeten jullie ook dingen na kijken of alleen tijdens werkcollege?
TA behavior ..Anne	85	Anne: Soms toetsen, maar dat hangt af van het vak waar je student assistent bent.
TA behavior Revise and check ..Jane	86	Jane: Surveilleren tijdens toetsen, maar niet de toetsen nakijken [schud nee].
..Nathalie	87	Nathalie: Nu wordt de groep wel wat groot,



- 88 Jane: [knikt ja]
- 89 Nathalie: dus er is een kans dat student assistenten wel mee moeten helpen,
- 90 Jane: Ja
- 91 Nathalie: maar in principe, kijkt meneer \_\_\_ alles na.
- 92 Nico: We hebben 1 practica in het jaar, een werk van 4 uur... die moeten wij beoordelen op uitvoering, en de professor zelf doet dan de documentatie daarachter nakijken.
- 93 Moderator: Ok. Welke communicatie middelen gebruiken jullie met de studenten? Hebben jullie buiten het werkcollege nog dat jullie ze spreken?
- 94 Anne: Ja, dat je ze op de gang tegen komt.
- 95 Nico: Ja
- 96 Nathalie: Eigenlijk geen
- 97 Nico: Ja email heel af en toe, als ze ergens echt mee vast zitten waar ik tijdens het college ook niet aan toe kom, dan zeg ik vaak nog "Ok, stuur nog maar een mailtje dan kan ik er in mijn tijd nog naar kijken en dan kan ik feedback geven."
- 98 Moderator: Oke, en met de andere student assistenten en de docent? Hoe verloopt daar de communicatie?
- 99 Anne: Gewoon in persoon of mail.
- 100 Nico: [knikt ja]
- 101 Anne: Aangezien de docent zo goed als altijd aanwezig is, behalve als die echt een hele belangrijke afspraak heeft.
- 102 Jane: [knikt ja] Bij ons ook
- 103 Nathalie: ja
- 104 Leon: [knikt ja]
- 105 Nico: Ja, voornamelijk mail denk ik.

..Jane		106	Jane: Ja
..Nathalie		107	Nathalie: Ja
Communication			
..Leon		108	Leon: [knikt ja]
..Moderator		109	Moderator: Als je naar een werkcollege kijkt, wat zijn dan frustraties waarvan je denkt dat ze opgelost moeten worden?
Don'ts		110	Anne: Te weinig of teveel student assistenten. Wij hebben keren gehad dat ik tic tac to op het bord ging spelen omdat ik niks te doen had en wij hebben gehad dat er de helft van de student assistenten er waren die er zouden moeten zijn.
TA behavior			
..Anne			
..Nathalie		111	Nathalie: Over het algemeen vind ik dat meneer ____ het redelijk goed uitbalanceert, maar het hangt gewoon af van hoeveel studenten er komen opdagen.
..Nico		112	Nico: [knikt ja]
..Nathalie		113	Nathalie: De colleges zijn niet verplicht, officieel zijn er voor dit jaar 240 studenten. Ja, als daar de helft niet van op komt dagen dan heb je wel vijf of zes student assistenten geregeld. Maar ja die hebben dan voor de helft van de tijd zeg maar niks te doen omdat er niet genoeg studenten komen opdagen. Dus ja daar kan je ook moeilijk op inspelen
TA behavior			
..Olaf		114	Olaf: komt binnen
Teacher behavior		115	Jane: Ik vind wel soms wel de uitleg, er wordt bij ons voor de college een uitleg gegeven door de docent, die vind ik soms wel heel erg langzaam of heel erg tedious, en dan heb ik het idee dat studenten zich vervelen.
..Jane			
Don'ts			
Student behavior			
..Anne		116	Anne: Dat heb ik soms ook wel met sommige docenten, dat ze toch weer uitleg willen geven in het werkcollege en dan duurt het heel lang, en dan denk ik: Dit had je in de lecture moeten doen en niet in de tutorial.
Teacher behavior			
Don'ts			
..Jane		117	Jane: [knikt ja]
..Nathalie		118	Nathalie: we hebben bij ons geen lectures over ____.
Teacher behavior			
..Anne		119	Anne: Ja oke
..Nathalie		120	Nathalie: het is een tien minuten intro presentatie naast van jongens ga maar aan het werk en als je vragen hebt komen we langs. En succes eigenlijk, dus een beetje een andere opzet.
Teacher behavior			

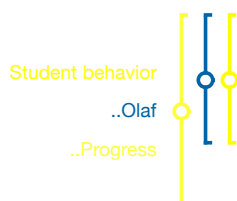
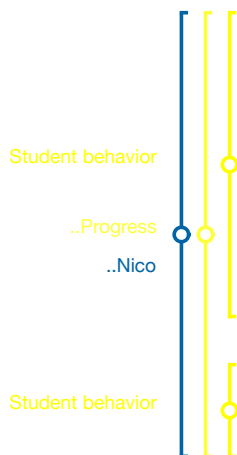
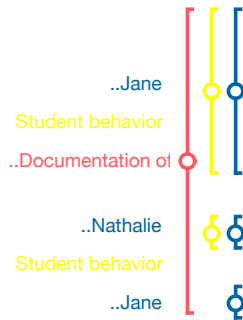
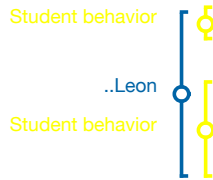


- 121 Jane: [knikt ja] Ik denk wel dat het voor eerste jaars belangrijk is om ze het eerst zoveel mogelijk te laten doen, ipv ze eerst uitleg te geven.
- 122 Nathalie: Ja [knikt ja]
- 123 Nico: [knikt ja]
- 124 Anne: De mensen die er niet mee overweg kunnen hebben de student assistenten om het uit te leggen. Dus ja (inaudible)
- 125 Moderator: Olaf, welkom.
- 126 Olaf: Ja dankjewel
- 127 Moderator: Olaf welkom. Neem wat drinken er zijn ook koekjes, dit wordt opgenomen dus er ligt daar een informed consent die je moet onderteken. Je mag nog even je naam op een sticker zetten. Verder is het voor de opname belangrijk dat je niet door elkaar mag praten. Je pakt de flow wel op, want het gaat best wel lekker.
- 128 Moderator: Zijn er ook echt dingen zoals net genoemd werd de taal barrière of dat er teveel handen omhoog gaan? Wat doe je dan? Hoe los je dat op?
- 129 Leon: Bij ons is het probleem dat iedereen tegelijk hun hand op lijkt te steken en dat je vervolgens weer een kwartier niks zit te doen.
- 130 Nathalie: [knikt ja]
- 131 Leon: En dan ja moeten mensen gewoon even wachten. En soms verdwijnen vragen ook van zelf weer na drie minuten, omdat ze zelf dan langer hebben nagedacht hebben.
- 132 Moderator: Ja
- 133 Jane: [knikt ja]
- 134 Nico: Bij ons vaak, verschilt het per opdracht. In het begin hebben ze vaak vragen omdat ze dan net zijn begonnen. Op een gegeven moment raken ze in de flow en dan op het eind wordt het een stukje moeilijker en dan komen er ook weer al die vragen. Dat is eigenlijk het hele college lang, aan het begin ben je veel aan het rond rennen, dan heb je het een paar colleges wat rustiger en op het einde moet je weer rond rennen dan heeft iedereen ook haast want ze moeten hun deadline halen.
- 135 Jane: [glimlach]

..Nico	136	Nico: Dus dat zie je wel.
..Moderator	137	Moderator: Heeft iemand hier een werkcollege twee keer gegeven, dus een jaar erop ook?
..Nico	138	Nico: Ja, [steekt hand op]
..Jane	139	Jane: [steekt hand op]
..Experience	140	Anne: [steekt hand op]
..Anne	141	Nathalie: Ja
..Nathalie	142	Moderator: Neem je de vragen die je het jaar ervoor hebt gehad mee? Schrijf je die op? Doe je daar wat mee?
..Moderator	143	Nico: Ja, wij proberen wel. Wij hebben dus een lab guide. Waarin de opdrachten staan en een aantal tips en dat soort dingetjes. Die proberen we wel elk jaar te verbeteren. Dus als je weer een probleem tegen komt of als je bij meerdere mensen voorkomt, dat dat wordt opgenomen zodat dat voor volgend jaar voorkomen kan worden.
..Experience	144	Moderator: Ja
..Nico	145	Leon: Een lab guide voor studenten?
..Experience	146	Nico: Ja, dat is nog best een goede dat je misschien voor de student assistenten een aparte guide maakt.
Do's	147	Anne: Wij doen er zo goed als niks mee omdat het eigenlijk altijd vragen zijn zoals "Huh waarom moet ik een float gebruiken?" Zeg maar, die vragen die je zelf zeg maar beter kan uitleggen. Dus nee, wij doen er zo goed als niks mee.
TA behavior	148	Jane: Wij doen er in principe ook niks mee [schud nee].
Student behavior	149	Nathalie: [schud nee]
..Anne	150	Jane: Maar je hebt op een gegeven moment wel de ervaring wat voor een soort vragen je kan verwachten, dat wel helpt.
TA behavior	151	Nico: [knikt ja]
..Jane	152	Anne: Ja en wat voor een soort opdrachten lastiger zijn.
..Nico	153	Jane: Ja
..Anne		
TA behavior		
..Jane		

..Nico	154	Nico: Ja
..Nathalie	155	Nathalie: Het hangt ook een beetje van het onderwerp af. De ene snappen ze is makkelijker en wordt sneller begrepen, het andere is wat ingewikkelder en dan ben je inderdaad wat langer aan het uitleggen.
Student behavior	156	Nico: [knikt ja]
TA behavior	157	Jane: [knikt ja]
..Experience	158	Nathalie: In het algemeen wordt je er ook handiger in naarmate je het vaker hebt uitgelegd.
..Nico	159	Moderator: Oke
..Jane	160	Leon: Ik merk dat ik niet vaak vragen krijg over hoe je het moet programmeren, maar omdat ze het niet snappen.
TA behavior	161	Jane: Ja [glimlach]
..Nathalie	162	Anne: [glimlach]
..Moderator	163	Nico: Ja
..Leon	164	Leon: Dus je krijgt ook daadwerkelijk dat je vier uur lang drie vragen aan het beantwoorden bent. Dat gaat de eerste keer een beetje moeizaam, want je moet zelf ook weer omspitten hoe je dat ook alweer gedaan had. En daarna gaat het wel.
Student behavior	165	Moderator: Oke, wat zou je willen verbeteren? Wat zou je zelf als je het helemaal anders mocht doen, wat zou je doen?
..Jane	166	Leon: Ik denk, in mijn geval is het al iets beter dit jaar. De documentatie bij code, dat kan echt veel schelen. Want als je tien regels code ziet staan is het eerste wat je denkt toch wel redelijke paniek.
..Nico	167	Nico: [lachen]
..Jane	168	Jane: [glimlach]
..Documentation of cc	169	Nathalie: [glimlach]
..Nathalie	170	Olaf: [glimlach]
..Olaf	171	Leon: En als je een beetje tekstuele uitleg erbij hebt wat een stukje code zou moeten doen, dan helpt dat toch wel een beetje om te
..Leon		





begrijpen wat je zou moeten doen.

172 Nico: [knikt ja]

173 Leon: En dan kom je ook makkelijker door de opdrachten heen. Maar dan gaat het bij mij in dit geval ook wel om lapsessie waarbij al van te voren een deel geïmplementeerd is. Die ze dan moeten hergebruiken. Als je zelf helemaal vanaf kaal begint, dan is dat natuurlijk een ander verhaal.

174 Jane: Ik ben het er ook wel mee eens dat bij die eerste jaars goed vanaf het begin heel erg nog meer dan al gedaan wordt er in moet krijgen dat je de code ook netjes moet houden, georganiseerd, gestructureerd moet houden en inderdaad comments neer moet zetten, want dat wordt inderdaad makkelijker.

175 Nathalie: Ook voor henzelf is dat makkelijker.




























176 Jane: Ja, vooral dat [knikt ja]






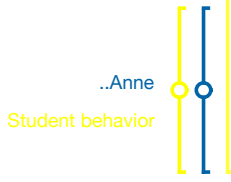

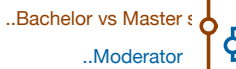







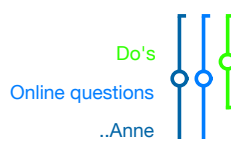
177 Anne: Bij 1 vak hebben we 1 keer in de hele module een meeting over het vak terwijl dat het net iets lastigere programmeer vak is. Daar zou het wel handig zijn iets meer meeting te hebben. Niet elke week maar 1 keer in de twee weken een of een keer per drie weken een pauze meeting. Dan zou je wel met de student assistenten kunnen bespreken wat je gaat doen en hoe je sommige vragen kan aanpakken.

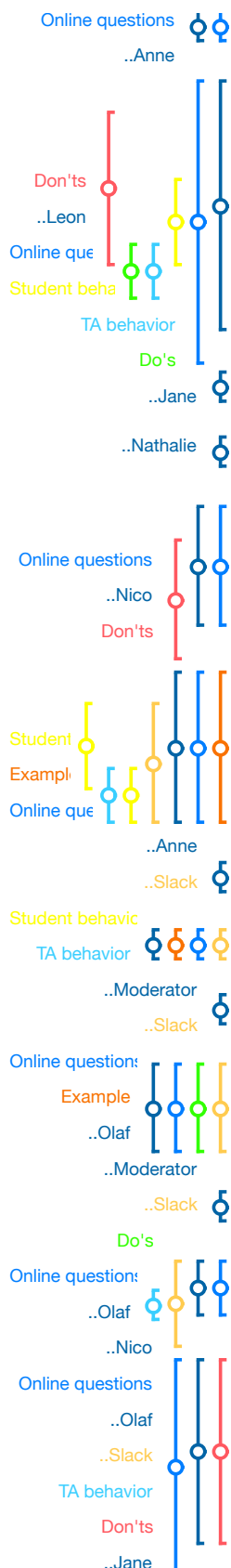
178 Leon: [pakt meer koffie]

179 Nico: Ik zit te denken misschien. Bij ons hebben ze tien opdrachten en ze hebben 1 deadline op het einde van het kwartiel. Je ziet bij heel veel studenten dat die eigenlijk in het begin heel veel vertraging oplopen doordat ze de omgeving nog niet kennen, de programmeer taal nog niet kennen. Heel veel gaan lezen of ik weet niet wat ze doen, maar in ieder geval niet met de opdrachten bezig gaan. Dat ze daardoor uiteindelijk heel erg achter lopen en op het einde komen pas de moeilijke opdrachten. Ze hebben maar vier uur de tijd om vragen te stellen en op het einde wil iedereen vragen stellen. Dus, ja dat is lastig. Dus misschien iets strakkere deadlines ofzo, of dat je in het midden nog een deadline doet. Hier moeten jullie de helft af hebben. Je ziet dat heel veel mensen het makkelijk halen, maar er zijn gewoon enkelingen die te laat beginnen.

180 Olaf: Ik heb ook het idee dat als mensen heel erg achter lopen, dat ze dan proberen nog meer te lezen, meer achtergrond informatie te krijgen, terwijl ze soms, het beste wat ze kunnen doen een beetje iets langer stil blijven staan bij het probleem dat ze proberen te tackelen,

..Progress		181	Nico: [knikt ja]
..Nico			
Student behavior		182	Olaf: in plaats van dat je op zo een internet loop komt. Iets meer focussen dus op de stof die gepresenteerd wordt.
..Olaf			
..Nico		183	Nico: Ja [glimlach]
Student behavior		184	Leon: Is het niet een beetje. Hoort het niet bij de universiteit dat je zelf het inzicht krijgt dat je door moet werken op een bepaald punt en als je dat niet doet dat je dan ook goed op je bek gaat.
..Leon			
..Progress		185	Nico: [knikt ja]
..Nico			
..Nathalie		186	Nathalie: Vind ik wel [glimlach]
..Leon		187	Leon: Ik bedoel, TOM haalt dat er misschien een beetje uit maar, dat is een andere discussie. [lachend]
..Nico		188	Nico: [knikt ja] Ja zeker waar
..Nathalie		189	Nathalie: Ja [lachend]
..Jane		190	Jane: [glimlach]
..Nathalie		191	Nathalie: Deels vind ik het inderdaad eigen verantwoordelijkheid, je ziet het nu al dat mensen achter beginnen te lopen.
Student behavior		192	Jane: [knikt ja]
..Progress			
..Jane			
Student behavior		193	Nathalie: Module 1 is zeg maar de basics van ___ en dat is allemaal wel makkelijk in te halen, maar dan in module 2 gaan ze keihard op hun bek met z'n allen. En dat zie je ieder jaar. Aan de ene kant heb ik zoiets van ja dat is je eigen verantwoordelijkheid en ik ben zelf ook op mijn bek gegaan [glimlach] daarna ging het wel goed. Je kan er ook wel weer van leren.
..Nathalie			
..Leon		194	Leon: [knikt ja]
..Progress		195	Nico: [knikt ja]
..Nico			
Student behavior		196	Nathalie: Er is ook wel een groot gros dat dat niet doet, maar dan is er ook de vraag wat doe je dan hier op de universiteit.
..Nathalie			
..Nico		197	Nico: Ja [glimlach]
..Olaf		198	Olaf: Ja

	199	Leon: Ik weet niet of jullie ook ze een beetje houvast geven van per week moet je ongeveer deze opdrachten doen.
	200	Nico: Nee
	201	Leon: Dat lijkt me op zich wel goed. Dan kan een docent er op zich ook best wel een beetje bangmakerij aan toevoegen [glimlach].
		Persoonlijk vind ik het een beetje kinderachtig om tussentijdse deadlines tot over de top te doen.
	202	Nico: ja, ja
 <p>Student behavior</p>	203	Anne: Ja, ik vind het misschien wel voor de eerste module waar de studenten die overstap maken van je wordt nu los gelaten, net iets kleiner. Maar daarna in module twee wel meer los te laten, want het is wel de universiteit. En er worden wel bepaalde dingen van je verwacht.
	204	Nico: Ik denk dat er ook inderdaad wel een verschil is tussen eerste jaars bachelor en überhaupt master studenten.
 <p>..Bachelor vs Master s</p>	205	Moderator: ja
	206	Anne: [knikt ja]
	207	Nico: we hebben nu dan wel een guideline van na vier weken moet je ongeveer 6 opdrachten af hebben en daarna is het eigenlijk niet meer de bedoeling dat je vragen stelt over die 6 opdrachten want dan gaan we verder met de rest van de opdrachten. Maar je ziet nog heel veel mensen die achter lopen. Dat vind ik persoonlijk zonde. Maar, ja dat is wel hun eigen verantwoordelijkheid.
 <p>Student behavior</p>		
 <p>Student behavior</p>		
	208	Jane: [knikt ja]
	209	Nico: [pakt drinken]
	210	Moderator: Oke. Stel dat er een systeem zou zijn, waarbij studenten vragen kunnen insturen. Wat zou daarvoor voor jullie belangrijk zijn. Wat is handig daarin? Bijvoorbeeld, dat studenten kunnen aangeven in welke categorie een vraag zit of dat ze willen aftekenen of een vraag willen stellen over de inhoud of ze hun code loop vast. Zijn dat dingen die handig zijn of zouden jullie andere dingen willen zien? Of helemaal niet vragen online?
 <p>Do's Online questions</p>	211	Anne: Ik vind vragen in persoon wel fijner, want dan kan je daadwerkelijk contact hebben met de leerling en zien of hij het begrijpt en zeg maar. Schriftelijk, ja dan zouden ze het ook wel uit het



boek kunnen halen.

212

Leon: Ik denk dat als je schriftelijk vragen in dient dat het dan ook meer code review wordt. Tenminste ik ben bang dat je dan meer op code reviews terecht komt en dat is zeker in mijn geval niet iets waar ik zin in heb. Een beetje gaan proberen te begrijpen wat voor—wat mensen er allemaal neer hebben gezet, dat moeten ze vooral zelf ook kunnen begrijpen. Je moet ze meer ook op een abstract niveau de goede richting in kunnen begeleiden. Maar ik weet niet of dat bij bachelor studenten net zo geldt.

213

Jane: [glimlach]

214

Nathalie: [glimlach]

215

Nico: Wel anders denk ik. Natuurlijk abstractie niveau is wel degelijk anders dan de master. Ik ben het er wel mee eens dat als je online vragen mag gaan stellen dat je al snel de vraag krijgt: ja, mijn code werkt niet. En dat je dan moet gaan uitzoeken waar de fout ligt.

216

Anne: Wat wij hadden bij een natuurkunde vak, daar waren er tutorials waar er persoonlijk vragen konden worden gesteld. En was er een slack kanaal, waar nog vragen in een groepsapp, konden worden gesteld, waarop een mede leerling of ook een student assistent kon antwoorden.

217

Moderator: Hebben anderen dit ook gebruikt?

218

Olaf: Ja, bij computer science wordt dit ook gebruikt in module drie.

219

Moderator: En beviel dat?

220

Olaf: Ik vond het wel fijn. Want soms had je van die vragen en je merkt dat die in het algemeen kanaal werden beantwoord, dan zag je dat er eens stuk of zes studenten die vraag ook niet meer hadden.

221

Nico: [knikt ja]

222

Olaf: Ik zag ook wel dat er een beetje een code werd gehanteerd van oke wij gaan niet jullie huiswerk zomaar oplossen.

223

Jane: Maar ik heb wel altijd het idee, dat vooral bij de eerste jaars in het begin er heel veel verschil is tussen wat mensen voor een zetje nodig hebben. Mensen die wel dezelfde vraag kunnen hebben en bij de een moet je die echt heel erg aan de hand nemen en de ander heeft alleen maar een zinnetje nodig en kan dan zelf verder. Dat verlies je een beetje als je online antwoord geeft.



224 Anne: Ja maar ik denk ook dat het heel erg af hangt per vak. Want bij programmeren zou ik nooit echt slack willen gebruiken, omdat het altijd heel erg anders is, en dan kom je snel op ik heb deze code geschreven, wat is hier fout aan?

225 Nico: Ja

226 Anne: En je wil niet thuis een half uur aan die code willen zitten en denken oke ik ga nu een error hierin vinden. Bij natuurkundige vakken is de vraag meer hoe bereken ik dit en dan kan je makkelijkere hints geven omdat het gewoon een kleinere vraag is.

227 Nathalie: [knikt ja]

228 Nico: [knikt ja]

229 Leon: [knikt ja]

230 Jane: [knikt ja]

231 Moderator: Oke

232 Olaf: Ja en als je er vanuit gaat dat je gewoon het minimale geeft dat ze dan nog iets nodig hebben dan komt er nog wel een vraag.

233 Anne: Ja daarom

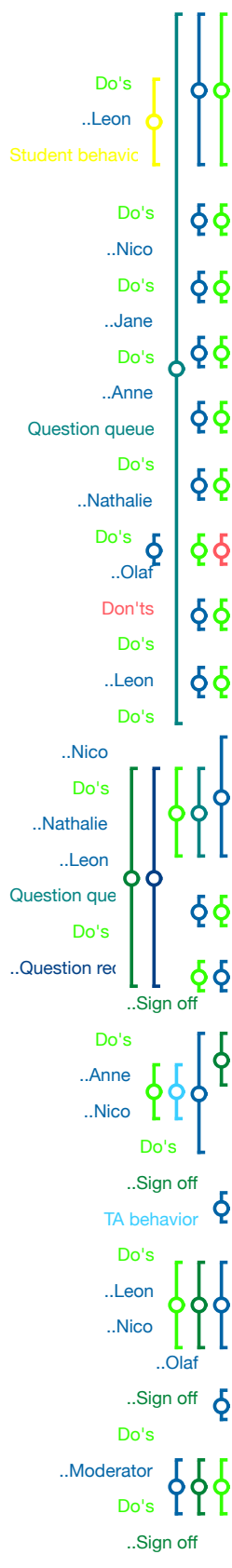
234 Moderator: Om het handen opsteken weg te halen. Ik heb wel eens gehoord dat er werkcolleges zijn die daar een website voor gebruiken, waar studenten hun naam invullen en als zij aan de beurt zijn krijgen ze een pop-up dat ze hun hand op moeten steken en de student assistent kiest dan wie er aan de beurt is. Zou je zoiets fijn vinden of denk je nee doe gewoon die hand omhoog en wacht maar tot je aan de beurt bent?

235 Olaf: Persoonlijk vind ik het best wel fijn, want je ziet heel duidelijk, je weet dan een beetje wanneer je aan de beurt komt en dat dat dan echt zo is, ik bedoel zo een computer gaat niet lopen fucken met de data.

236 Nico: [lachen]

237 Nathalie: [glimlach]

238 Jane: [glimlach]

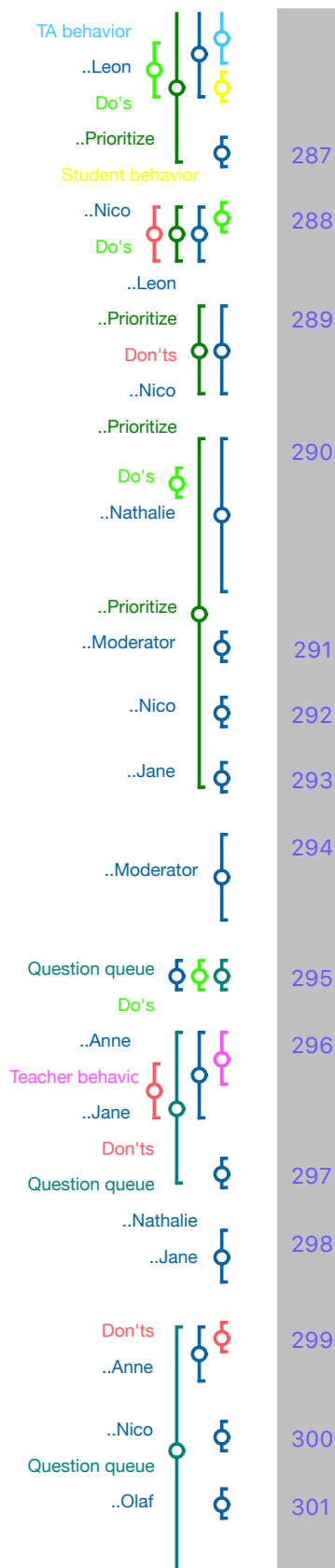


- 239 Leon: Ik denk dat het voor misschien niet eens voor student assistenten de grootste winst is maar dat je als student vooral er baat bij hebt. Je weet dat er uiteindelijk iemand naar je toe gaat komen. Dan kan je in ieder geval, nou ja afhankelijk van je probleem natuurlijk, nog verder werken met andere dingen.
- 240 Nico: [knikt ja] [glimlach]
- 241 Jane: ja [knikt ja]
- 242 Anne: [knikt ja]
- 243 Nathalie: [knikt ja] [glimlach]
- 244 Olaf: [knikt ja]
- 245 Leon: En dat je niet een lamme arm hebt na tien minuten
- 246 Nico: ja
- 247 Nathalie: ja
- 248 Leon: Ja en ik denk dat je dan, hangt natuurlijk een beetje af van, maar dat je ook nog iets hebt wat dan onderscheid maakt tussen aftekenen en daadwerkelijk vragen, ik denk dat je daar best nog wel winst op kan pakken.
- 249 Anne: Ja eens [knikt ja]
- 250 Nico: ja
- 251 Leon: zeker als je ook nog onderscheid maakt in welke vraag afgetekend moet worden, bijvoorbeeld. Dat je kan zeggen nou deze mensen lopen zodanig voor, dat aftekenen kan nog wel even wachten. Bij wijs van spreke.
- 252 Nico: [kijkt bedenkelijk]
- 253 Olaf: Ja je ziet ook dat onderscheid tussen welke week je af wil tekenen. Soms ook handig is als je een week wil prioriteren als student assistenten.
- 254 Moderator: Hoe bedoel je dat?
- 255 Olaf: Gewoon een lijstje met week vier aftekenen. Dan kan je zeggen, we halen eerst de gene die een beetje achterlopen om af te tekenen.

..Nico Do's	256	Nico: Ja
..Moderator	257	Moderator: Oh ja, ja. Dat is ook wel ongeveer wat Leon zei. Eerst mensen die meer vragen moeten aftekenen eerst.
..Leon	258	Leon: En dan praat ik als ik er zo nu over na denk, praat ik meer uit mijn ervaring. Die ik dan heb van het programmeer gedeelte van module twee van ____, toen ik daar als student zat. Niet zo zeer als student assistent.
..Moderator	259	Moderator: Oke, dat is goed om te weten.
..Jane Don'ts	260	Jane: Ik denk wel dat je nu ook wel een beetje mee op moet passen. Ik heb best wel vaak dat als ik door zo een zaal loop dat mensen die eigenlijk niet een hele grote vraag hebben maar het niet helemaal snappen, die je toch even aanspreken. En als je dan niet een wachtrij hebt dan kan dat. Maar als je echt in de rij moet gaan staan dan zijn dat misschien mensen die dan toch maar niet die vraag stellen.
..Question request		
..Anne ..Question request	261	Anne: Ja, maar aan de andere kant. Dat zou ongeveer het zelfde effect zijn als iedereen met de hand op zit, want als iedereen met de hand op zit, ga je niet langzaam door het lokaal heen lopen.
..Jane ..Question request	262	Jane: Dat is waar.
..Question request ..Anne Do's	263	Anne: En als je die form hebt als je maar die insign form hebt en er staat daar niemand dan kan je altijd door het lokaal lopen.
..Jane Question queue	264	Jane: dat is waar [knikt ja]
Do's ..Nico	265	Nico: Ik denk misschien ook, dat het juist de drempel weg neemt. Het is makkelijker om even in te schrijven online of iets dan tien minuten met je hand omhoog zitten.
Do's ..Anne	266	Anne: Ja [knikt ja]
Do's ..Jane	267	Jane: knikt ja
..Nathalie Don'ts	268	Nathalie: [kijkt bedenkelijk]
..Nico Do's	269	Nico: Dus misschien juist wel meer dat je, meer interactie met de studenten krijgt.
Do's ..Leon	270	Leon: Je moet dan alleen wel er goed op letten dat zij, als een student zeg maar instuurt dat die een vraag heeft, dat die zich ook weer uit kan checken.

Do's		271	Nico: Ja [glimlach]
..Nico			
Do's		272	Anne: Ja
..Anne			
..Jane		273	Jane: [glimlach]
Do's			
Question queue		274	Nathalie: [glimlach]
..Nathalie			
Do's		275	Olaf: [glimlach]
..Olaf			
Do's		276	Leon: Volgens mij is het daar al een keer op stuk gelopen bij informatica
..Leon			
Don'ts			
..Moderator		277	Moderator: Ja, dat heb ik ook wel eens gehoord. Maar ook dat mensen dan zeiden van "oh ik ben bijna bij die vraag dus ik wil wel aftekenen" en dan waren ze aan de beurt en realiseerden ze zich dat ze er toch nog niet klaar voor waren en dan snel uit de rij stappen. Maar dat doen ze wel
..Nico		278	Nico: ja
..Nathalie		279	Nathalie: [knikt ja]
..Question request		280	Jane: [knikt ja]
..Jane			
..Moderator		281	Moderator: Maar dat doen ze ook met de hand opsteken en op het bord schrijven.
..Nico		282	Nico: Ja, klopt [knikt ja]
..Moderator		283	Moderator: Zouden jullie dan willen, stel dat we zoiets zouden maken, dat er dan een prioriteiten wachtrij komt die de keuze maakt wie er aan de beurt is? Moet het systeem bepalen wie er eerst is, met een ranking van dit is een vraag, dit is aftekenen, die is zo ver in de opgaven. Of zou je willen dat je die informatie krijgt te zien en dat je als student assistent kan kiezen wie je wil helpen.
Do's		284	Olaf: Ik zou willen kiezen, want ik denk dat het heel erg afhankelijk is van de situatie en dat dat ook meespeelt.
..Olaf			
..Prioritize			
Don'ts			
..Anne		285	Anne: en ook hoe lang ze al zitten te wachten. Want als je altijd prioriteit boven prioriteit hebt bij het systeem, dan krijg je mensen die straks een uur zitten te wachten en dat is ook weer niet de bedoeling. Dus als je gewoon sorteert op wachttijd of zo en daarna kan kiezen, deze heeft voor mij toch iets voorhang dan ga je naar die toe.
..Prioritize			
Do's			
TA behavior			
TA behavior		286	Leon: Als jij ziet dat iemand dat iemand dan al een half uur met een





vraag zit en iemand ander die wil aftekenen die er ook al heel lang zit dan. Iemand die afgetekend moet worden kan ook nog wel een paar minuten langer wachten, want die kan waarschijnlijk toch wel verder.

287 Nico: hmm mm

288 Leon: Daar kan je zelf wat makkelijker invloed op uit oefenen dan dat je dat goed wilt implementeren.

289 Nico: Ja, omdat het voornamelijk afhankelijk is van heel veel factoren, denk ik. Voor 1 vak is dat denk ik prima te implementeren, maar als je dat over de uni breed wil wordt het misschien wel heel lastig.

290 Nathalie: Bij ons in ieder geval, want wij hoeven niemand af te tekenen. Dus op volgorde is prima. Of ik nu eerst iemand met een vorig hoofdstuk beantwoord en daarna iemand die bij loopt, maakt mij niet zoveel uit, iedereen werkt toch wel in zijn eigen tempo. Dan mag dat systeem zeggen, nou Pietje is boven aan, dan ga ik naar Pietje.

291 Moderator: Ja

292 Nico: [knikt ja]

293 Jane: [knikt ja]

294 Moderator: Oke, jullie zouden het geen probleem vinden dat je dat op de computer dat moet aanzetten, dat je naar je eigen computer moet lopen om dat dus te kunnen doen?

295 Anne: Misschien ook via een mobiele app of zo.

296 Jane: Of dat je als docent van te voren op meerdere plekken een laptop klaar zet. Als je in een grote zaal zit is het wel irritant als je de hele tijd van achter helemaal naar voren moet lopen.

297 Nathalie: Ja [knikt ja]

298 Jane: Maar als je dan ook achterin een laptop neerzet heb je dat ook weer weg gehaald.

299 Anne: Het nadeel is dat misschien leerlingen daar weer op gaan kijken wat natuurlijk ook niet de bedoeling is.


















300 Nico: [lachen]

301 Olaf: [lachen]

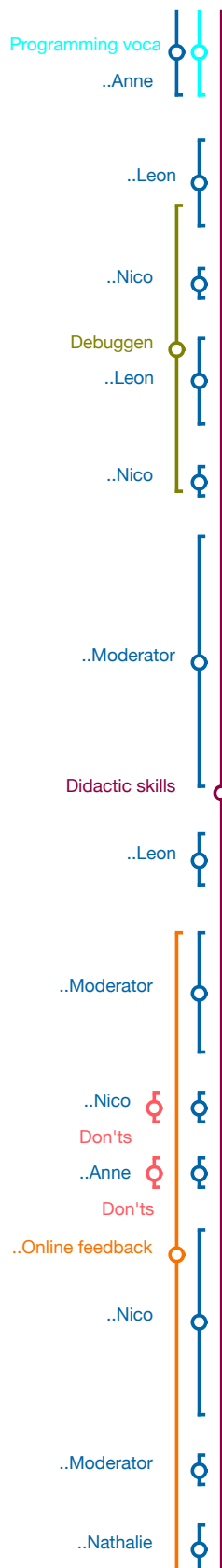
Question queue	👤	302	Jane: true [glimlach], die kun je dan wel weer lokken
..Jane			
..Moderator	👤	303	Moderator: ok
..Leon	👤	304	Leon: Je kan best een webpagina maken die je gewoon op je mobiel kunt openen.
Do's	👤		
..Jane	👤	305	Jane: [knikt ja]
Question queue	👤	306	Olaf: [knikt ja]
..Olaf			
..Nico	👤	307	Nico: [knikt ja]
..Anne	👤	308	Anne: [knikt ja]
..Nico	👤	309	Nico: Ja als je het dan toch gaat maken [glimlach]
Do's	👤	310	Leon: het hangt een beetje van het vak af natuurlijk, maar ik loop zelf ook vaak met een laptop rond.
..Leon	👤		
..Prioritize	👤	311	Olaf: Ja
Do's	👤		
..Olaf	👤	312	Anne: Ik teken eigenlijk altijd af op mijn mobiel, want dat is voor mij net zo makkelijk. Wij tekenen af via een googleform en dat is voor mij op mijn mobiel net zo makkelijk, dan hoef je niet elke keer met je laptop te sjouwen.
Do's	👤		
..Prioritize	👤		
..Anne	👤		
Don'ts			
..Moderator	👤	313	Moderator: Ok, even kijken. Dit waren de vragen die ik had. Hebben jullie nog andere dingen waar jullie van denken, nou hier moet je echt rekening mee houden, of denk hier aan, dit is belangrijk voor student assistenten?
..Olaf	👤	314	Olaf: Ik vind dat ook, soms zou het ook fijn zijn als er een beetje focus is op hoe los je als student assistent nou een vraag op. Wat is de juiste aanpak. Tenminste ik denk niet dat de juiste aanpak is om alles los te gooien en met informatie te vullen, wat is dan ideaal? Wat ziet de UT graag?
..Moderator	👤	315	Moderator: ja
Didactic skills	👤	316	Leon: Zijn er ook niet cursussen voor voor student assistenten?
..Leon			
..Moderator	👤	317	Moderator: Didactische vaardigheden, ja.
..Nico	👤	318	Nico: Die zijn er wel [knikt ja], maar ik heb hem ook nooit gehad.
..Moderator	👤	319	Moderator: Nee?

..Nathalie	⊗	320	Nathalie: Ik ook niet [schud nee]
..Jane	⊗	321	Jane: nee ik ook niet [schud nee]
..Anne	⊗	322	Anne: nee, ik ook niet [schud nee]
..Olaf	⊗	323	Olaf: nope [schud nee]
..Nathalie	⊗	324	Nathalie: ik wist niet eens dat het bestond
..Nico	⊗	325	Nico: Ik weet alleen dat een vriend van mij die is nu tweede jaars bachelor en die moest hem wel volgen
..Leon	⊗	326	Leon: Ik weet dat ze bij ____ in het begin als mensen in hun tweede jaar student assistent worden, dat ze er dan rekening mee houden en fel op zitten]
..Nico	⊗	327	Nico: Ja
..Leon	⊗	328	Leon: Maar daarna wordt dat wel minder als ze daarna nog zij instromen in het student assistent schap
..Moderator	⊗	329	Moderator: Ja
Didactic skills	⊗	330	Leon: Ik bedoel ook nu, bij ____ waar ik help daar zaten ze met hun handen in het haar, van waar halen we de student assistenten vandaan? Dus dat is dat ook niet het eerste waar ze aan denken.
..Anne	⊗	331	Anne: Ik heb nog nooit iemand gehoord die zoiets gedaan heeft.
..Leon	⊗	332	Leon: Ik weet ook niet hoe lang die cursus duurt. Of dat zeg maar een keer een middag sessie is, of.
..Nico	⊗	333	Nico: Ik dacht inderdaad een dagdeel, of zoiets.
..Moderator	⊗	334	Moderator: Bij Pre-U als je daar werkt dan moet iedereen dat. Als je daar werkt moet je in ieder geval 1 avond de didactische cursus doen.
..Nathalie	⊗	335	Nathalie: Ik wist niet eens dat die bestond [glimlach]
..Anne	⊗	336	Anne: Ik ook niet
..Leon	⊗	337	Leon: Ik denk dat dat soort dingen in zijn algemeen nuttig zijn als de docenten daar zich wat meer op focussen. Ik denk dat je daar als student assistent het voor jezelf ook alleen maar makkelijker mee maakt. [lachend]

..Anne	○	338	Anne: Ik heb 1 docent gehad die daar wel de aandacht op legde. Die zei, bij dit soort vragen, moet je ze zeggen ga dat eerst maar even googlen, want hier ga ik nu even geen antwoord op geven, over een kwartier mag je terug komen. En die heeft wel gezegd dit soort vragen gaan we geen aandacht aan besteden, dat is gewoon googlen, dat kunnen ze mooi zelf doen. Maar ook inderdaad van, geef je het hele antwoord weg, hint je, natuurlijk heb je daar zelf wel een gevoel over, maar de ene student assistent zou daar makkelijker in zijn dan de ander.
..Nico	○	339	Nico: Ik moet wel zeggen nu ik het tweede jaar dit vak geef, ga ik daar wel anders mee om. In het begin was het nog een beetje aftasten van wat en hoeveel moet ik geven en soms was dat inderdaad iets te veel en had je al bijna het hele antwoord gegeven. Af en toe nog niet, oke, maar nu heb ik vaker dat ik aan de student zelf vraag van “wat probeer je te doen?” en “wat is je bedoeling. Heb je hier al aan gedacht misschien?” Dat soort dingetjes.
..Olaf	○	340	Olaf: Ja, vaak als ze het dan gaan uitleggen, dan lossen ze het zichzelf al op.
..Nico	○	341	Nico: Ja [knikt ja]
Didactic skills	○	342	Olaf: Maar, ik heb ook wel het idee als er heel veel student assistenten rondlopen dat mensen heel snel een vraag gaan stellen. Dat is een beetje zonde, want dan mis je eigenlijk het cruciale gedeelte en dat is dat je een beetje vast loopt en het niet helemaal snapt maar dat je het uiteindelijk toch gaat proberen en er een beetje zelf uit komt. Maar goed, als de student assistent dan de focus heeft op het minimale dan is dat geen probleem, maar dat is niet altijd het geval.
..Anne	○	343	Anne: Ja je hebt inderdaad gewoon sommige student assistenten die het bijna helemaal voor zeggen en dan denk ik “doe dat nou niet.” Ik zeg dat “pak er even een papiertje bij, teken even het programma uit en dan kom ik zo bij je terug. Dan gaan we samen even kijken van wat zou je dan voor deze stap doen?”
..Nathalie	○	344	Nathalie: Hangt ook af van de vraag
..Anne	○	345	Anne: Ja
..Nathalie	○	346	Nathalie: Als het gaat over de denkstappen erachter dan kan je dat doen, maar als ze een programmeer fout hebben dan gaat dat wat lastiger.
..Anne	○	347	Anne: Ja

..Jane		348	Jane: Ja dat klopt wel
..Moderator		349	Moderator: Ja
..Olaf		350	Olaf: Als er gewoon een bug in zit, vind ik dat persoonlijk niet een probleem om te verhelpen voor ze
..Jane		351	Jane: nee
..Nico		352	Nico: nee
..Anne		353	Anne: nee
..Nathalie		354	Nathalie: Nee, maar als ze een vraag hebben over de achtergrond, dan kan je dat in principe op die manier aanpakken. Anders is het daar ben je een ; vergeten of iets dergelijks.
..Anne		355	Anne: Maar als het een iets andere bug is bijvoorbeeld dat ze iets verkeerd hebben gebruikt of zo, dan vind ik het wel belangrijk dat als je het dan voor ze oplost, dat ze daadwerkelijk begrijpen waarom het fout was.
..Nathalie		356	Nathalie: Ja, nee dat is waar [knikt ja]
Didactic skills		357	Anne: Want sommige student assistenten zeggen dan “o ja dit is fout” en dan is het klaar, maar laat de leerling dan begrijpen wat er daar nou fout is
..Anne		358	Jane: Ook in het gebruiken van bepaalde functies, dat je niet zegt, “o nee je moet dit iets anders erin zetten of je hebt dat niet goed gedaan, maar zoek zelf eens op” hoe je dat moet doen en dan verwijzen naar de pagina’s waar ze het antwoord kunnen vinden.
..Jane		359	Anne: Google is dit, dit en dit. Nou wat staat hier op deze webpagina
..Anne		360	Jane: precies [knikt ja]
Programming voca		361	Nico: Ik denk dat dat ook heel veel scheelt tussen bachelor en master. Master studenten zijn zelf al wat initiatief rijker in o even googlen, de functie opzoeken, wat voor een parameters, blablabla. En bachelor studenten hebben vaak van, “oke ik heb gezien dat ik dit moet gebruiken, waarom werkt het niet?”
..Bachelor vs Master		362	Leon: Ik denk dat het ook verschilt per studie hoeveel aandacht er wordt besteed aan online documentatie in bepaalde talen. Want matlab, python, java het staat allemaal al ontzettend voorgekauwd op het internet. C is daar wel een uitzondering, maar dat is dan ook een
Programming voca			
..Leon			

Programming voca	☺☺		hele nare taal.
..Leon			
..Nico	☺	363	Nico: [lachen]
..Jane	☺	364	Jane: [glimlachen]
..Moderator	☺	365	Moderator: daar zijn wel weer hele dikke boeken over.
..Leon	☺	366	Leon: Ja, ik weet niet hoeveel focus daar op ligt. Ik weet dat dat bij informatica wel zo is.
..Nico	☺	367	Nico: Bedoel je op C
..Leon	☺	368	Leon: Nee, op de online documentatie. Want ga nou gewoon zelf eens even lezen wat daar staat en wat zo een functie nou precies doet.
Programming voca	☺		
..Nico	☺	369	Nico: Ik moet zeggen dat in de bachelor ___ heel weinig.
..Leon	☺	370	Leon: Dat is echt zonde want daar kan je als je dat eenmaal in de gaten hebt, eigenlijk staat alles op internet al voorgekauwd.
..Nico	☺	371	Nico: Ja
..Moderator	☺	372	Moderator: Ja, dan zou je zelfs autodidact kunnen worden.
Didactic skills	○		
..Jane	☺	373	Jane: [knikt ja]
		374	Olaf: Ik heb persoonlijk het idee dat bij informatica dat proces van student assistenten iets handiger vind. Het voordel vind ik, het is meer van, je gaat tutorials doen en dan heb je die tutorials gedaan en de student assistent gaat dan checken wat je fout hebt gedaan en wat je goed hebt gedaan. Wat je fout had gedaan, daar kwam je dan meestal ook echt niet uit. Terwijl bij de studie die ik begeleid heb ik het gevoel, dat ze er zelf ook nog wel uit waren gekomen als ze er iets meer tijd aan gaven.
..Olaf	○		
..Nico	☺	375	Nico: [knikt ja]
..Anne	☺	376	Anne: Ja
..Olaf	☺	377	Olaf: Maar bij informatica heb is het wel zo dat het vaak echt vast lopen is. Heb ik het idee
		378	Anne: Ik heb bij mijn studie wel het idee dat ik ze meer moet pushen om het zelf uit te zoeken en te gaan googlen. En dan zelf meer te gaan denken van "Oh, wacht als ik deze methode op internet zoek dan kom ik er ook achter. Oh ik weet niet meer hoe ik een klasse moet maken,
Programming voca	○		
..Anne	○		



ik zoek heel even een voorbeeldje op internet, dan leer ik daarvan.” En op die manier weet je het, want heel vaak zeg ik ook tegen een leerling “Ok, google even op deze woorden en kijk daar zelf even naar.”

379 Leon: Het is ook wel vaak zo bij informatica dat daar wel veel aandacht aan besteed wordt, omdat dat basicly is wat je aan het leren bent. Maar dingen zoals debuggen, kennen ook heel veel mensen niet

380 Nico: nee

381 Leon: en dat is echt heel stom. Dan kan je echt ook super triviale fouten mee uit je code halen die je zelf wel over het hoofd ziet als je een keer op run klikt.

382 Nico: Ja [knikt ja]

383 Moderator: Er was een docent en die zei dat als studenten feedback kregen van een student assistent dat ze dan best wel zenuwachtig zijn en dan wel luisteren en begrijpen op dat moment, maar dat ze na het college het eigenlijk weer vergeten. Dus niet goed genoeg die informatie opslaan. Dus deze docent zei, misschien zou het wel fijn zijn als de student assistent of de student nog even ergens herhaald van wat is er nou eigenlijk besproken, zo los je dat nou op en dan eventueel online doen.

384 Leon: Je zou eigenlijk voorbeeld code moeten hebben waar je dit zou kunnen aanstippen

385 Moderator: Dat of dat wat je net hebt uitgelegd, dat de student dat dan moet terug koppelen, maar dan op canvas of een plek waar ze dat zouden kunnen zetten. Zien jullie daar heil in of denk je daar zitten ze echt niet op te wachten, dat is alleen maar extra typewerk?

386 Nico: Ik denk dat dat heel veel extra werk oplevert.

387 Anne: Ja

388 Nico: Als ik even kijk we hebben volgens mij deze module 100 studenten en vier student assistenten, als je ziet hoeveel vragen wij krijgen dan ben je daar volgens mij wel veel tijd mee kwijt. Soms is het een klein probleem, maar soms moet je ook pointers uit gaan leggen en dat is een lang verhaal als je dat ook nog eens moet uit gaan typen, ben je wel lang me bezig.

389 Moderator: Ja

390 Nathalie: Je kan wel een soort terugkoppeling doen bij de student als

..Nathalie			je daar staat. Met, leg mij nu eens uit wat ik jou net heb uitgelegd.
..Nico		391	Nico: Ja
..Nathalie		392	Nathalie: Het hoeft niet heel lang te zijn even kort, als hij dan al helemaal de verkeerde kant uit gaat dan heb je al zo van oh wacht hij heeft het dus niet begrepen. Als hij wel gewoon weer kan terug koppelen, dan weet je dat het helpt en kan je weer door.
..Nico		393	Nico: Maar dat is dan wel weer op dezelfde dag.
..Nathalie		394	Nathalie: Ja dat is dan wel zo [knikt ja]
..Anne		395	Anne: Maar dan vind ik het ook weer een stukje verantwoordelijkheid van de leerling zelf om te denken mij is het net uitgelegd, ik begrijp het niet zo goed, ik ga nu voor mezelf een notitie maken.
..Olaf		396	Olaf: ja [knikt ja]
..Nathalie		397	Nathalie: Ja
..Nico		398	Nico: [knikt ja]
..Jane		399	Jane: [knikt ja]
Didactic skills			
..Online feedback		400	Moderator: Ja
..Moderator			
..Anne		401	Anne: Want ja het is geen basisschool dat je moet opschrijven wat je hebt geleerd.
..Leon		402	Leon: Ja aan het begin van het eerste jaar moet je misschien nog een beetje in de goede richting geleid worden, maar je moet natuurlijk ook een beetje jezelf daarin ontwikkelen.
..Nico		403	Nico: [knikt ja]
..Anne		404	Anne: Ja
..Leon		405	Leon: Op een gegeven moment moet je wel zo volwassen zijn dat als je er niet uit komt
..Nathalie		406	Nathalie: Ja en om nou de volgende les weer bij iedereen langs te gaan die een vraag had gesteld dan is de tijd ook zo alweer voorbij
..Nico		407	Nico: Ja [knikt ja]
..Anne		408	Anne: Ja, ik heb sowieso niet zo gemerkt dat een student heel erg



..Anne			zenuwachtig was bij het vragen van een vraag. Want als jij gewoon een zeg maar goede sfeer aan geeft en er is een goede sfeer in de klas en je legt de drempel gewoon laag, dan is er volgens mij niet iemand die te zenuwachtig is om vragen te stellen. [schud nee]
..Olaf	409		Olaf: Wat volgens mij soms ook is dat ze het fijner vinden als er een student assistent is die een niet al te oudere jaars is omdat die nog iets dichterbij zit hoe zij zelf denken
..Anne	410		Anne: Ja
..Olaf	411		Olaf: Snap je als het dan eerste jaars zijn en een master student die neemt dan al iets te grote stappen voor hen
Didactic skills			
..Online feedback	412		Anne: Ja, dat scheelt misschien ook wel want ik ben derde jaars en ik help eerste en tweede jaars. [knikt ja]
..Anne			
..Jane	413		Jane: Het ligt ook heel erg aan de docent. Want wij hebben wel voor andere vakken docenten gehad die gemeen over kwamen, ja dan durf je ook geen vragen te stellen.
..Nathalie	414		Nathalie: Nee, [schud nee]
..Jane	415		Jane: Maar als je inderdaad een goede sfeer hebt neem je dat heel vaak weg.
..Anne	416		Anne: [knikt ja]
..Moderator	417		Moderator: Oke, vanwege de tijd gaan we afronden ik zal een korte samenvatting geven.



## Appendix N

# Focus group interview with TAs 2

..Moderator

1 Moderator: My name is Heleen, you can also say Hellen if that is easier. I'm a master student of Science Education and Communication and I'm am gonna be a teacher of computer science on high schools next year, hopefully. And for my context year I do a year of the master Human Media Interaction, to get more computer science knowledge. And I also do my master thesis at HMI, I invented this thesis research question, because I have been on this university for about eight years and I noticed that every time I had tutorials I would have to sit with my hand up for a long time to get help. And I thought well we are a technical university. Why don't we solve this problem. Or other problems that occur during tutorials. Because I want to solve this in a human centred way, that means that I want to research first what the target groups need and then I am going to search for literature and hopefully find a solution. Or maybe I will have to design something. For this interview, this is a focus group interview, it will be recorded, afterwards I will delete the recording when I am done transcribing. I will change your names for anonymity, so I you want to have a really cool name, you can write it on your sticker at the end of the session. But don't mention it out loud because then your anonymity is gone. This interview is not a test. There are no wrong answers. I am very interested in how you think and feel about tutorials, more about the process of a tutorial then the subject that you assist. It is okey to disagree with each other, because I am interested in every opinion. It will be recorded and afterward I can see how many of you agree or disagree. So the purpose of this interview is to determine your ideas and opinions to be able to pinpoint how tutorials can be improved. Especially tutorials that include programming. For the recording it is important that every takes a turn when they speak, it doesn't need to be round the clock, but please don't speak through each other, because the camera can't catch that and I can't write that fast. Okey let's start with an introduction round.

..Bob

2 Bob: My name is \_\_\_ I am a second year master computer science student and I tutor \_\_\_ and I have done several TA jobs that involved programming in the past.

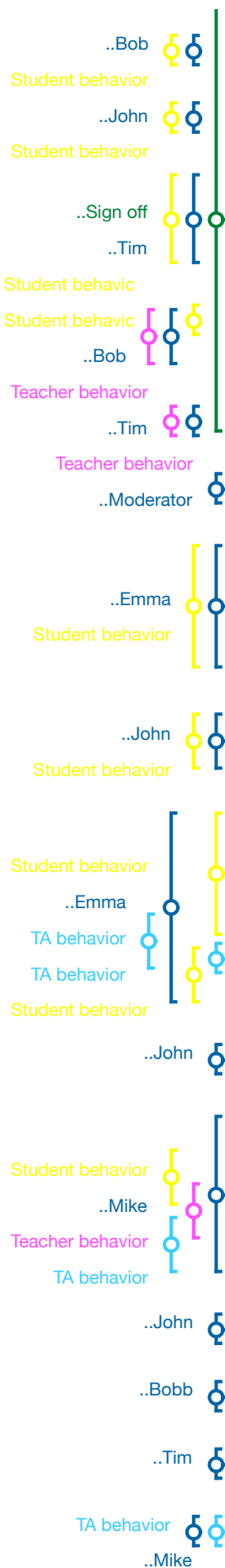
..Mario

3 Mario: I am first year for the master \_\_\_ and I am tutoring the programming in \_\_\_ course.

..Tim

4 Tim: I am finishing my \_\_\_ thesis and I have been assisting for four or five years in programming in \_\_\_

..John	5	John: I am ___ and I am a second year master student of ___ and I am a programming teacher assistant at programming ___
..Mike	6	Mike: Alright I am ___ I am a second year ___ student, master. I teach, I am a teaching assistant at a master course.
..Emma	7	Emma: I am ___ I am a bachelor student and I do the same as John.
..Moderator	8	Moderator: Okey, we'll start at the first question. Could you explain what happens during tutorials? So, what are the main factors? If someone says something that you agree with that you have as well, than you can agree or nod, the camera will get it.
..Mario	9	Mario: So, mean how do tutorials work from our point of view?
..Moderator	10	Moderator: Yeah
..Mario Student behavior TA behavior	11	Mario: So for programming, the theory is that students do try their exercises or obviously check their the theory before. And then they come there to do the exercises in groups or alone and then they ask us if they have questions.
..Bob Student behavior	12	Bob: [nods yes]
..John Student behavior	13	John: [nods yes]
..Mario TA behavior	14	Mario: They can come to us with any kind of question about the course.
..John Student behavior	15	John: [nods yes]
..Mario	16	Mario: I don't know what else to say about it.
..Moderator	17	Moderator: Do you have sign offs, where they need to sign off assignments during the tutorial?
..Mario ..Sign off Student behavior TA behavior TA behavior	18	Mario: Not for us, they have the freedom to do the exercises when they really want, they have a final deadline. There is a kind of a middle deadline, that is symbolic, it is just that after we don't support the questions they have previous of a certain one. So like they have to be done with half of the questions by that time, and if they have questions about the questions of the first half we say "Sorry I need to ask the more complex questions to the later exercises."



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Bob: [nods yes]

John: [nods yes]

Tim: With \_\_\_ they don't have to complete the assignments it is all voluntary, but at the exam they are allowed to bring them. So if you have made them well you benefit from them.

Bob: Same with \_\_\_ but there is like a suggested structure too that you can do the exercises per tutorial.

Tim: yeah

Moderator: Ok

Emma: With \_\_\_ they have one exercise that they have to complete. It is actually one big exercise a sort of project. The students are pretty free in what they make but the project needs to include...

John: [nods yes] Yeah contain all the elements that have been discussed.

Emma: So, yeah, all the learning goals of the cours need to be included in their final assignment. And next to that the also have normal assignments. Both theory and small programming exercises and they don't have to make them. But they can ask us questions about them and have them checked like "Is this okey? Did I finish it correctly?"

John: Those assignments are all part of their training practice.



































Mike: So with \_\_\_ it is quite different, because it is not really about the exercises themselves, but they get a grade for the whole practical. So they have to complete all the exercises and then it is checked by the professor, or someone else. Not by me.






























John: [smiles about the joke]

Bobb: [smiles about the joke]



















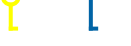






Tim: [smiles about the joke]

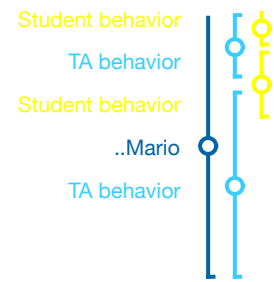
Mike: But I get to answer the questions.

..Moderator		34	Moderator: Ok
Teacher behavior		35	Tim: In ___ the teacher usually starts with an introduction sheets. It is about 20 minutes and everybody is not looking.
..Tim			
Student behavior		36	Bob: [laughs]
..Bob			
..Emma		37	Emma: [laughs] yeah
Student behavior			
..John		38	John: [laughs]
..John		39	John: It is their responsibility right?
Student behavior			
..Tim		40	Tim: Yeah [makes a hand gesture to agree]
Student behavior			
..Bob		41	Bob: [smiles in agreement]
Student behavior			
..Emma		42	Emma: yeah [smiles in agreement ]
Student behavior			
..Moderator		43	Moderator: Are there other tutorials where the teacher uses an introduction, or speaks in between?
..Emma		44	Emma: Yes, also with our programming course the teacher first starts, often starts with a short introduction of the exercises.
Teacher behavior			
..John		45	John: [nods yes]
Teacher behavior			
Student behavior		46	Emma: And sometimes in the middle if a lot of students don't understand a certain thing from the exercises than he explains some more about how to do it and gives some tips. From where to look it up, for example. Or he gives some example and then you can make your own thing out of it.
..Emma			
Teacher behavior			
Student behavior			
..Bob		47	Bob: [nods yes]
Teacher behavior			
..Moderator		48	Moderator: Ok. We'll continu. What are your responsibilities as a TA?
TA behavior		49	Mario: Well, for me I would say, just being there, and answering questions.
..Mario			
..Bob		50	Bob: [smiles] [nods yes]
TA behavior			
TA behavior		51	Tim: [smiles] [nods yes]
..Tim			

..John		52	John: [smiles in agreement]
TA behavior			
..Emma		53	Emma: [nods yes]
TA behavior			
..Mike		54	Mike: Questions about what?
TA behavior			
..Mario		55	Mario: like the exercises. Also about the...
TA behavior			
..Tim		56	Tim: [nods yes]
..Mike		57	Mike: like how to program?
Student behavior		58	Mario: Yes, exactly. They start with the basics, like how to program for loops and they just go there sometimes and they don't even know what is a loop,
..Mario			
Student behavior		59	Bob: [nods yes]
..Bob			
Student behavior		60	Mario: because they "kind of saw it in the lecture" but they didn't even check it
..Mario			
Student behavior		61	Tim: [smiles in agreement]
..Tim			
TA behavior		62	Mario: so maybe I need to explain: "they loop is like this [uses his hands], maybe you can try it out"
..Mario			
TA behavior		63	Bob: [nods yes]
..Bob			
Student behavior		64	Mario: then they continue if they don't succeed, we come back. But the responsibility is just being there. Maybe preparing a bit the exercises, but we are supposed to have done them last year so.
TA behavior			
..Mario			
TA behavior			
TA behavior		65	John: jup
..John			
..Mike		66	Mike: But you still have to prepare right?
TA behavior		67	Mario: Yeah, maybe prepare them a bit and the topics. Sometimes there is this student who surprises you because he is already at the last assignment. And then I am like "oh, fuck"
..Mario			
Student behavior			
TA behavior			
..Tim		68	Tim: [laughs]
..Bob		69	Bob: [smiles in agreement]
TA behavior			
..John		70	John: [smiles in agreement]
TA behavior			



..Emma		71	Emma: "I did not prepare for this" [smiles]
TA behavior			
..Mario		72	Mario: "yeah I did not prepare at all" [laughs] But yes
TA behavior			
..Bob		73	Bob: Yeah
TA behavior			
..Moderator		74	Moderator: Ok, other responsibilities?
Student behavior		75	Bob: Usually students also expect you to, or at least in my case, expect you to know organisational stuff as well.
..Bob			
TA behavior			
TA behavior		76	Mario: [nods yes]
..Mario			
Student behavior		77	Bob: Like: "When is the deadline for this?" Or "Is this mandatory?" Stuff like that.
Student behavior			
..Bob			
Student behavior		78	Emma: Yeah
..Emma			
Student behavior		79	Mario: True
..Mario			
Student behavior		80	John: Yeah
..John			
..Tim		81	Tim: [looks questionable at the ceiling]
Student behavior		82	Mario: Yeah like "When do we need to hand this in?" Or ...
..Mario			
TA behavior		83	Mike: I just redirect them to [moves his hands to the side] someone else.
..Mike			
TA behavior		84	Bob: yeah, [nods yes]
..Bob			
TA behavior		85	Emma: Yeah sometimes I know the answer. Els its: "Check the module manual. Check the the document with all the assignments in there, it has also a lot of information in there. Check the document." "It's not there" "Look at the last page" "Oh!" [laughs]
..Emma			
Student beha			
TA behavior			
Student behavior		86	Bob: [smiles in agreement] Yeah exactly
..Bob			
TA behavior		87	Mario: [smiles in agreement]
..Mario			
TA behavior		88	Mike: yeah
..Mike			
TA behavior		89	Mario: Now that you said it. We also need to assemble the groups, because they need to work in pairs at all the
TA behavior			
Mario			



..Moderator

..Mario



TA behavior  
..John

TA behavior  
..Emma

TA behavior  
..Tim

TA behavior  
..Mario

..Moderator



Student behavior  
..Bob



Didactic skills  
..Mario

TA behavior  
..John

TA behavior  
TA behavior

..Bob

..Mike



assignment. And at some time if they do not have a group, we just make them. Or if they want to change or something like that. So we have control of the platform where they upload the assignments. And also in some special cases we can ignore some hand-in so they don't lose some points. Like if it was a syntax mistake, or a mistake that doesn't have to do with the exercise.

90 Moderator: yeah, I've seen the system, pretty cool.

91 Mario: yeah

92 Tim: It is not really your responsibility but if some student likes it, then give some more in-depth questions. To give some things behind the software.

93 John: [nods yes]

94 Emma: Background information.

95 Tim: yeah

96 Mario: [nods yes]

97 Moderator: Ok

98 Mike: With \_\_\_ it is just. They ask questions, half of the time it is about the programming language and half of the time about the course.

99 Bob: yeah [smiles in agreement]

100 Mike: So when a student has some question and says: "It doesn't work." You first have to find out, what you have to answer a question about.

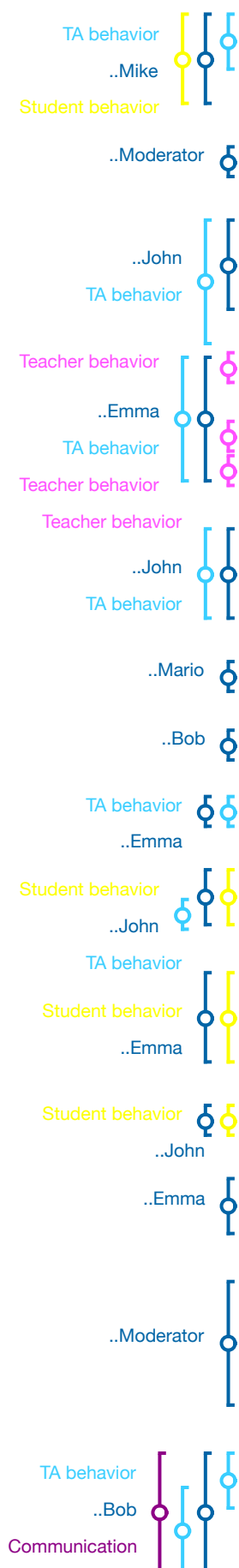
101 Mario: [nods yes]

102 John: [smiles in agreement]

103 Bob: [nods yes]

104 Mike: That's a bit different. Most of the time it is about the course, because they should know the programming language.

105 Mario: Shouldn't or should?



106 Mike: Should. At least some basic things. Of course if they have some problem with the syntax I can help. But generally it is about the \_\_\_\_.

107 Moderator: Ok

108 John: Yeah, we are also involved in grading the assignments. Emma mentioned the final assignment, and we have to actually check it.

109 Emma: Yeah, we have a rubric, so we can check if everything is in there and we can check at what level this is. And if we are not sure we can always ask the teacher, but if we are sure about "Ok this is this grade" then he might check it afterwards.

110 John: And some student assistants are also involved in a organising a special day kind of something. A special programming sports day, it's basically a one day hackathon.

111 Mario: [laughs as if he likes it]

112 Bob: [smiles as if he likes it]

113 Emma: Yeah

114 John: Were they have to make something a game or something. We are involved in organising that.































115 Emma: Yeah, they get an assignment at the beginning of the day and then they have, first they have to brainstorm and then they have one day to complete something cool.

116 John: Yeah

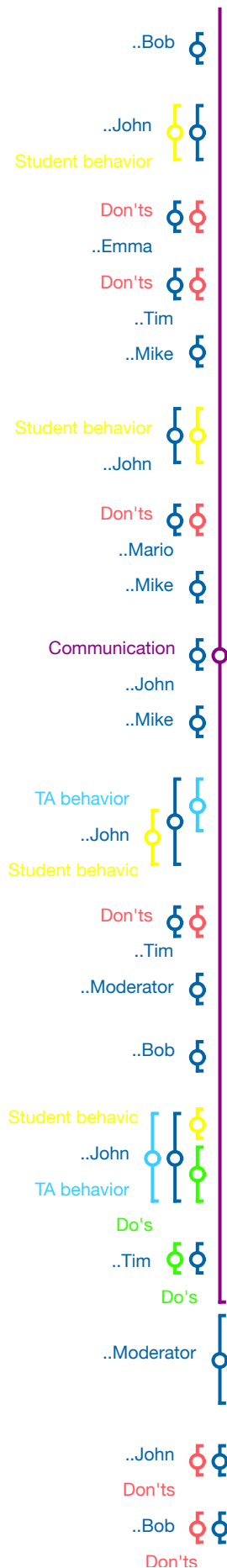
117 Emma: Most of the time it works half. Half of the programs work. But if they work they are really awesome.

118 Moderator: Cool. Ok, we will go to the next question. How do you communicate with the students? And other student assistants, so with each other and with the teacher? So, what communication channels do you use or is it only face to face?

119 Bob: So in \_\_\_\_ I try to, if I need to reach a student I try to find out if he is there, and talk to him face to face, and otherwise I would just email to him. With student assistants usually

..Bob			WhatsApp, because that's quickest, email alternatively.
TA behavior			
TA behavior		120	John: [nods yes]
..John			
TA behavior		121	Bob: And we do do weekly meeting as well, so that is usually the point where you communicate with the teacher.
..Bob			
Teacher behavior			
..Moderator		122	Moderator: Those weekly meetings who are there?
TA behavior			
Teacher behavior		123	Bob: The TAs and the teacher. [nods yes]
..Bob			
..Moderator		124	Moderator: Are there other methods, or same thing?
TA behavior		125	Mario: In my case we don't have a lot of communication. But I wouldn't say it is a problem in our course there isn't a lot of complex stuff, we just sit there and we wait. We don't even have a WhatsApp group, for example, we thought about that, but we don't do it. With the teacher, maybe one of us communicates with them and then synchronises with the rest.
..Mario			
Teacher beha			
TA behavior			
TA behavior		126	Bob: It is also different per course. Because one course we have 30 TAs or something like that.
..Bob			
Communication		127	Mike: What the hack
..Mike			
Student behavio		128	Mario: With the students it is supposed that they only communicate with us in the classroom. It is not expected from us to communicate through email. Sometimes maybe we just give the email for some special occasion or something.
..Mario			
TA behavior			
..Tim		129	Tim: We just read during the tutorials. But thats enough.
TA behavior			
..Mike		130	Mike: So, generally there is no need to communicate between TAs?
Don'ts			
..Mario		131	Mario: No
Don'ts			
..Tim		132	Tim: [shakes no]
Don'ts			
..Moderator		133	Moderator: I don't know, I have never been a TA, that's why I ask the question.
..Mario		134	Mario: No, I meant with the ehh
Don'ts			
..Emma		135	Emma: students
Don'ts			

..Mario		136	Mario: Students
Don'ts			
..John		137	John: [nods yes]
..Mike		138	Mike: Oh yeah, because I don't need to communicate with
TA behavior			students outside the tutorials.
Don'ts			
..Emma		139	Emma: no
Don'ts			
..John		140	John: (mumbles) yes
Don'ts			
..Mario		141	Mario: [nods yes]
Don'ts			
..Tim		142	Tim: Yeah, they may email, if they really have questions
Do's			
Student behavior		143	Mike: yeah, sure
..Mike		144	Tim: but yeah
Do's			
..Tim		145	Mario: This is somebody that is really desperate
Don'ts			
Student behavior		146	Tim: Yeah [smiles in agreement]
..Mario		147	Mike: [nods yes]
Student behavior			
..Tim		148	Mario: something maybe they prefer email
Communication			
..Mike		149	Tim: (inaudible joke) [laughs]
Student behavior			
..Mario		150	Bob: [smiles]
Student beha			
..Tim		151	Mike: To the professor himself I just mail alright.
Teacher behavior			
..Bob		152	Tim: Yeah [nods yes]
Teacher behavior			
..Mike		153	Mario: Yeah
TA behavior			
TA behavior		154	John: [nods yes]
..Tim		155	Mario: Sometimes I just go to his office and grab whatever
TA behavior			paper we need, like a list with students or something.
..Mario			
..John		156	Tim: [looks skeptic]
TA behavior			
Teacher behavior		157	John: Yeah, last I am also student assistant at ___ I just realised
..Mario			it is also a kind of a programming course. [Laughs]
TA behavior			



158 Bob: [smiles]

159 John: and last week I actually got a facebook message from a student [amazed]

160 Emma: "oh shit stalker"

161 Tim: Whooh

162 Mike: [looks amazed]

163 John: He added me on facebook and he asked something about his hand-in, so I just realised that

164 Mario: [laughs nervously]

165 Mike: [smiles in amazement] What did you say?

166 John: Ehm

167 Mike: Like "Dude, weird?"

168 John: No, I was actually, because I was checking there assignments anyway and he was very quick, because he noticed that I made a mistake with his thing—hand-in, and he

169 Tim: "So, he roosted you on facebook?" [smiling]

170 Moderator: [laughs]

171 Bob: [smiles]






















172 John: No, he just wrote me and I was like "Oh yeah, good that you say it" So I, you know at such a moment I'm rather thankful that he also fixes my mistake

173 Tim: [nods yes]

174 Moderator: Ok, we'll go on to the next one. This is a harder question. It is about frustrations that you encounter while being a TA during a tutorial. So, anything...


























175 John: Assignment sets that suck [smiles]

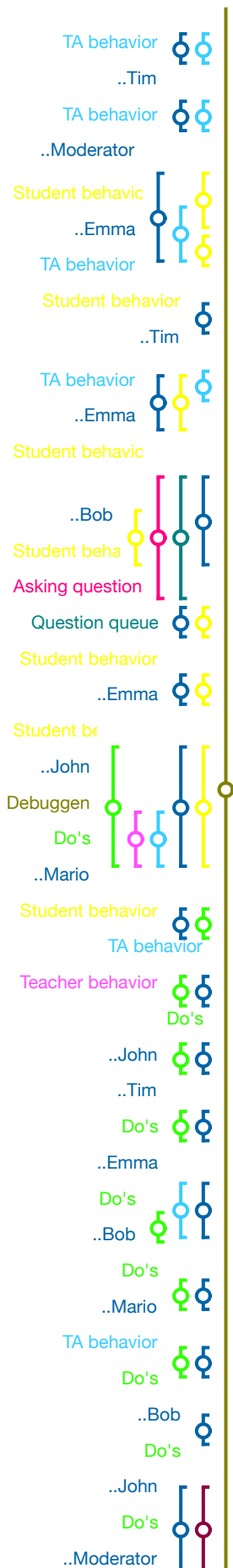
176 Bob: Yes, [nods yes] [laughs]

..Tim		177	Tim: [smiles in agreement]
Don'ts			
..Mario		178	Mario: [smiles in agreement]
Don'ts			
..Mike		179	Mike: [smiles in agreement]
Don'ts			
Don'ts		180	Emma: Yeah, bad assignments I think are the number one frustration. You're like in the room and you're like "I know this is bad, I know this is not very clear what you have to do, I'll explain it again, so I hope you get it"
..Emma			
TA behavior			
..John		181	John: [nods yes] [smiles in agreement]
Don'ts			
..Bob		182	Bob: Yes [smiles in agreement]
Don'ts			
..Mario		183	Mario: [smiles in agreement]
Don'ts			
Student behavior		184	Emma: And yeah when they get frustrated at me I'm always like "Yeah I can't do anything about it, mail the professor, mail the educational committee, anybody but not me, please leave me alone with this, I want to help you with everything, but go away with all your frustrations."
..Emma			
TA behavior			
..Mike		185	Mike: [smiles in agreement]
TA behavior			
..John		186	John: yeah
TA behavior			
..Bob		187	Bob: yeah
TA behavior			
Student behavior		188	Moderator: So, they get frustrated with you? As well
..Moderator			
..Bob		189	Bob: yes
Student behavior			
Student behavior		190	Emma: Well no, but yeah, it is mostly because of bad assignments.
..Emma			
Student behavior		191	Mike: Not specifically with you probably but more with assignment themselves
..Mike			
Student behavior		192	Emma: Yeah
..Emma			
..Mike		193	Mike: Because they
..Emma		194	Emma: They're frustrated and they eh...

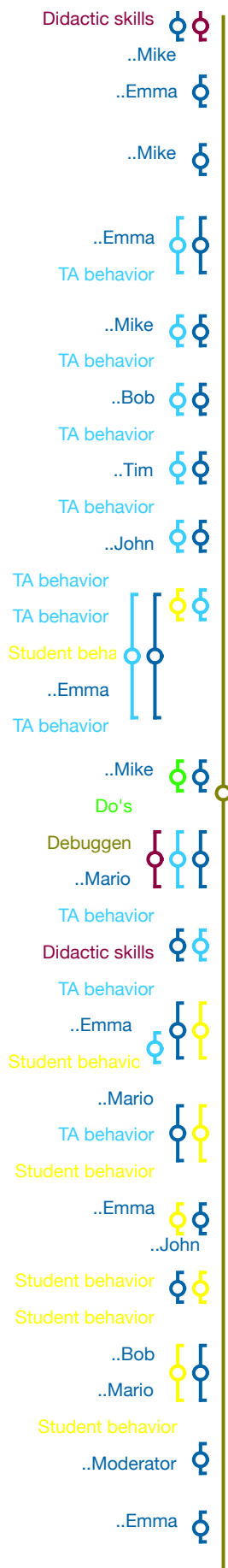
..Mike 	195	Mike: They act it out on you [smiles in amazement]
Student behavior		
..Bob 	196	Bob: [nods yes]
TA behavior 	197	Emma: Because I'm the person there that can answer stuff
..Emma		
..Moderator 	198	Moderator: yeah
..Emma 	199	Emma: about the assignments
Student behavior 	200	Mario: In my course, also, it is so basic that some students have never seen any program language
..Mario		
Student behavior 	201	Tim: [nods yes]
..Tim		
..Bob 	202	Bob: [nods yes]
Student behavior		
Student behavior 	203	Mario: Sometimes they are let's say "doing exercise three" and you are, they make you a question and you realise that, to answer it you need to go back to exercises one and two
..Mario 		
TA behavior 		
..Mike 	204	Mike: [smiles in recognition]
TA behavior		
TA behavior 	205	John: [nods yes]
..John		
Student behavior 	206	Mario: They expect an answer, but you basically are killing them too with boredom because you have to explain this [hands gesture] explain that [hand gesture]
TA behavior 		
..Mario		
TA behavior 	207	John: [nods yes]
..John		
TA behavior 	208	Bob: [nods yes]
..Bob		
Student behavior 	209	Mario: they did not expect that, it's kind of, yeah
..Mario		
..Bob 	210	Bob: yeah
Student behavior		
Student behavior 	211	John: yeah
..John		
Student behavior 	212	Mike: So they just want some answer and be gone with it?
..Mike		
Student behavior 	213	Mario: Yeah, and I'm like, "I can't answer this, because if you are asking this [hand gesture] it means that you did not understand this, this, this and this [hand gestures]" And you go back to...
..Mario 		
TA behavior 		



..Bob		214	Bob: And also bad exercise sets, it just increases wait times.
Don'ts			
..Emma		215	Emma: Yeah
Don'ts			
Don'ts		216	John: [nods yes]
..John			
Student behavior		217	Bob: People just take their frustration out on you for a couple of minutes, and then other people have to wait longer. [smiles]
..Bob			[hand gesture moving out in circles]
Student behavior		218	Mike: [smiles in agreement]
..Mike			
..John		219	John: yeah
Student behavior			
..Bob		220	Bob: it all cascades
..Moderator		221	Moderator: yeah
..Emma		222	Emma: Also something that frustrates me sometimes that especially I noticed that with programming, but it also happens in other assisting student jobs, that they like aks "What's wrong?" And they have 100 lines of code
Don'ts			
Student behavior			
Don'ts		223	Bob: [smiles in agreement]
..Bob			
Don'ts		224	Mario: [smiles in agreement]
..Mario			
TA behavior		225	Emma: and I am standing there like "I don't know"
..Emma			
..Bob		226	Bob: (sarcastically ) "You should know" [laughs about joke]
..Mario		227	Mario: [laughs about joke]
Debuggen			
..Tim		228	Tim: [smiles]
..Mike		229	Mike: [smiles]
TA behavior		230	Emma: And I'am like "Well what's going wrong with the program?" And then something really strange happens, and I'm like "Ok, have you checked, this? Have you checked that?" And then they get frustrated with me because I don't know it. "What do you expect?"
..Emma			
Student behavior			
TA behavior		231	Bob: yeah
..Bob			
TA behavior		232	John: [nods yes]
..John			



- 233 Tim: yes
- 234 Moderator: Yeah
- 235 Emma: But most of them understand when you explain it to them like "eh I don't know what you did here. So I first have to take a look at everything, so. So, they mostly understand but,
- 236 Tim: MAGIC poof [hand gesture] [laughs about joke]
- 237 Emma: first when you think you know what they have done, they put their program in front of you
- 238 Bob: but those questions are usually also deliberately take longer to answer the question. So they understand the deeper things that go on in my head, and they understand as well
- 239 Emma: yeah
- 240 John: [nods yes]
- 241 Mario: Yes, there is also a thing I think, like if it is your first contact with programming you cannot do that, but when they have done some exercises I think it would be good to explain a bit of debugging
- 242 John: [nods yes]
- 243 Tim: [nods yes]
- 244 Emma: yes
- 245 Bob: [smiles in agreement]
- 246 Mario: a bit. Because I noticed when I was starting it sucked, I hated it, but now, putting in the break point etcetera it helps.
- 247 Bob: [nods yes]
- 248 John: [nods yes]
- 249 Moderator: Yeah
- 250 Mike: So, you [points at Emma] try to solve the question and find the bug, or do you help them in to debugging



programming?

251 Emma: Eh,

252 Mike: So, they can do it themselves the next time?

253 Emma: I try to help them sort of, take them with me in the process

254 Mike: [nods yes]

255 Bob: [nods yes]

256 Tim: [nods yes]

257 John: [nods yes]

258 Emma: I'm like "Do this" "Why is that" I'm like "Maybe it is something in this function." And eh, at least I take them through the steps so maybe next time can try those first for themselves.

259 Mike: Yeah, maybe that's the most efficient.

260 Mario: The thing is, guiding them to where they reach the point where it's failing

261 Emma: Yeah

262 Mario: Then they can figure out by themselves "why is it failing?" And you teach them how to get there

263 Emma: yeah, and if you know where it goes wrong, they also understand themselves why it was wrong, so.

264 John: [nods yes]

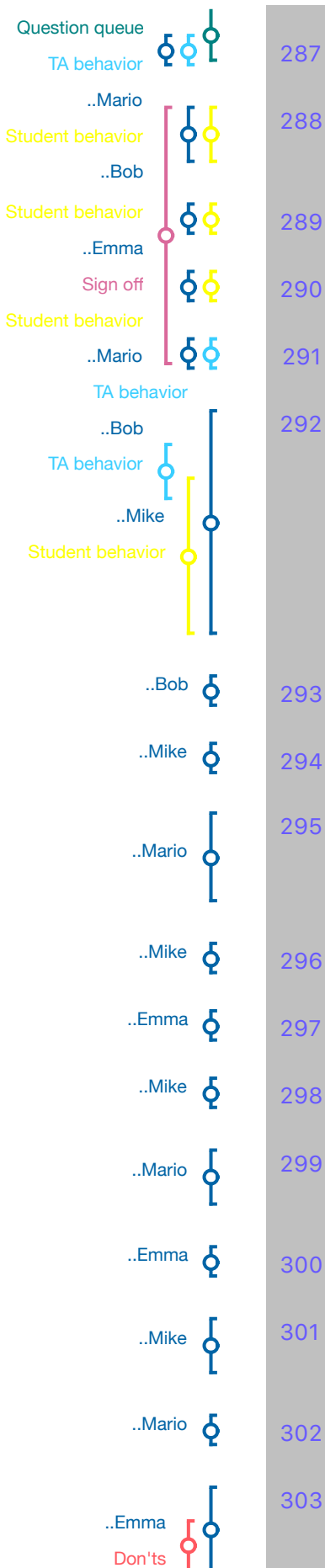
265 Bob: yeah

266 Mario: [makes a hand gesture singling that Emma says what he meant]

267 Moderator: Ok

268 Emma: They just don't know how to find it

..Moderator		269	Moderator: Ok, I heard you [points at bob] say something about waiting times, you said those questions take longer to solve. Is that a problem as well?
..Emma TA behavior		270	Emma: not for me, because we have a lot of TAs,
..Tim TA behavior		271	Tim: Yeah a lot
..Emma TA behavior		272	Emma: so often not everyone is involved with someone, and there is always someone to answer the questions that come up, so you do have the time to spend 20 minutes with someone. If it is necessary.
..John TA behavior		273	John: [nods yes]
..Mario TA behavior Don'ts		274	Mario: For my course it is fine I normally have quick questions. We are four TAs for a 100 people, but normally not every body comes. But I have had courses, beside being a TA, that was terrible. Literally we spend more than half an hour waiting in the queue to get a student assistant
..Emma Don'ts		275	Emma: Oh my god
..Tim Don'ts		276	Tim: [laughs in recognition]
Question queue Don'ts		277	Bob: [nods yes] (inaudible) yep
..Bob Don'ts		278	John: [nods yes]
..John Student behavior		279	Mario: I mean when you really don't know what's going on, and you really need the help, and everybody is desperate to show it.
..Mario Student behavior			John: [nods yes]
..John Student behavior		280	Mario: And this kind of peaks, of course
..Mario Student behavior		281	Tim: [nods yes]
..Tim Student behavior		282	Mario: Like anything it peaks. Like sometimes we are four of us waiting [crosses his arms]
..Mario Student behavior		283	And then sudenly everybody [raises his hand]
..Emma Student behavior		284	Emma: yeah, we have that as well
..Bob Student behavior		285	Bob: yeah
..Bob		286	



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Mario: You cannot predict that

Bob: Especially with sign offs. Like sometimes, most people wait until like the last half hour of the day

Emma: yeah

Mario: hmm hmm

Bob: of the day you are allowed to sign off. Use queues

Mike: So, I wanna make a remark about the bad assignments, because time it doesn't really influence me I guess. But, I feel like when the assignments are explained differently. A different set of people will also complain, because right now, like most of the students understand, but some don't, because it is unclear. When you change the description you just switch it around,

Bob: [laughs]

Mike: so it doesn't really help, probably.

Mario: But do you think it is because they are different kinds of people. Like sometimes during a course we have kind of people who have different backgrounds?

Mike: O, no. I think just how they sort of

Emma: the phrasing

Mike: Yeah,

Mario: So, kind of your mental processing they have different ways

Emma: yeah, thats true sometimes

Mike: So you can explain it "better" but it. I mean is it really "better"? It depend on how you interpret stuff

Mario: [nods yes]

Emma: It's better I think if the amount of persons who understand it increases. But some sets are terrible and nobody

..Emma			understands it.
Don'ts			
..Bob		304	Bob: [smiles in agreement]
Don'ts			
Don'ts		305	Mike: Yeah, so, sure, some sets are terrible and nobody
..Mike			understands them, they should be better. But sometimes it depends, so
..Mario		306	Mario: [nods yes]
..Emma		307	Emma: that also happens
..Moderator		308	Moderator: Ehm
..John		309	John: Also to the list of frustrations I would like to add
Don'ts			people with a bad attitude
Student behavior			
..Emma		310	Emma: oh, god damn it, yes
Don'ts		311	Bob: [laughs in recognition]
..Bob			
Don'ts		312	Mario: oh, yeah
..Mario			
Don'ts		313	Bob: yes
..Bob			
Don'ts		314	John: well some students who just do everything very last minute and don't really care about how they hand in their assignments
..John			
Student behavior			
Don'ts		315	Bob: [nods yes]
..Bob			
Don'ts		316	Emma: yeah
..Emma			
Don'ts		317	John: if there is a yes, or no question. Then it is kind of expected that you also give an explanation
Student behavior			
..John			
..Emma		318	Emma: sometimes it even says it's expected
Teacher behavior			
..John		319	John: yeah, and then this guy just writes "nope" [makes a sad face]
Student behavior			
..Mike		320	Mike: But yeah, you will give them no points right?
TA behavior			
TA behavior		321	John: Yeah, and you know with other courses they have to, I get them with me and when I grade their assignment I sometimes give them the opportunity to defend themselves.
TA behavior			
..John			
Student behavior			

TA behavior  
 ..John  
 Student behavior

..Emma

..Moderator

..Bob

..Mario

..Tim

Student behavior  
 ..John

..Bob

Student behavior

..Emma

Don'ts

TA behavior

..Bob

Don'ts

Don'ts  
 ..Emma

Don'ts  
 ..Marion

Don'ts  
 ..Tim

Don'ts  
 ..John

..Reading question

Don'ts

..Bob  
 ..John

Don'ts

Student behavior

TA behavior

Don'ts

..Emma

Don'ts

“Why did you write down that?” Even though it is wrong, and then if they just stand there with an “attitude the merde” [laughs]

322 Emma: [laughs about his joke] perfect

323 Moderator: [laughs about his joke]

324 Bob: [laughs about his joke]

325 Mario: [laughs about his joke]

326 Tim: [laughs about his joke]

327 John: It's you know, it doesn't benefit their own grade

328 Bob: [smiles in agreement]

329 Emma: yeah, some people are really—it is not really annoying, but they get on my nerves. I don't care if you did something wrong or if you are curious why you got a certain grade, but if you don't put in effort and start complaining to me about that I didn't grade you right. “because you clearly didn't read the assignment.” Then I'm just done

330 Bob: [points at Emma] not reading the assignment is also a frustration

331 Emma: oh yeah that sucks

332 Marion: [smiles in agreement]

333 Tim: [smiles in agreement]




















334 John: [nods yes] or not correctly, reading the assignments because that's what I see a lot in \_\_\_\_,

335 Bob: [nods yes] yeah






















336 John: because I have to fail a lot of people because they did not read the assignment correctly. And that sucks
















337 Emma: Yeah

338 Moderator: Yeah






















Don'ts			339	Mario: [nods yes]
..Mario				
..Mike			340	Mike: That is not something you can do anything about, right?
..Emma			341	Emma: no
..Reading questions				
..Mario			342	Mario: [raises eyebrows]
..Mike			343	Mike: you can say: "Read the assignment again." Or "Read it better"
..John			344	John: No, but
..Moderator			345	Moderator: In the other group, so we are going to go back to more general problems, they also mentioned that students who were lagging in the tutorials were a frustration. You also said that students to stuff last minute but have you noticed this as well? That they make the assignments to late, or in the end?
..John			346	John: [nods yes]
..Bob			347	Bob: [nods yes]
..Emma			348	Emma: Some people do
..Tim			349	Tim: Or just playing games during tutorials
..John			350	John: yeah
..Tim			351	Tim: And you say: "just go home" [smiles] "Don't do it in here."
..Progress				
..Mario			352	Mario: I mean, in our case, since they have the final deadline to hand in all the exercises, we don't really track. If they are like done, they don't even come. There are some people who are not even coming. We can check who did not hand in no assignments at all, but then we don't know if they dropped the course, or that something, but we don't know.
..Emma			353	Emma: It also really depends on the student, because some of them, really struggle with programming, but they try, and don't really get it. So you explain it four times and, but at least they try. And then I, it's fine. But if they are lazy and they wanna do everything at the last tutorial, that sucks.
..Bob			354	Bob: yeah




















..Mario		355	Mario: [nods yes]
..Emma		356	Emma: They think: "Ah, I can do this in four hours" "You can't."
..Moderator		357	Moderator: hmm hmm
..John		358	John: Yeah
..Bob		359	Bob: To me personally it does not matter very much if someone lags. I don't really mind explaining prior stuff. Yeah, sometimes you feel bad for them, because you can just see they are not going to pas the course.
..Mike		360	Mike: [smiles in recognition]
..Tim		361	Tim: yeah [smiles in recognition]
..Bob		362	Bob: Well yeah [laughs in recognition]
..Mario		363	Mario: Sometimes it is hard to judge, if they are really being lazy or something like that so I won't deny
..Progress		364	Bob: (inaudible) yeah
..Bob			Mike: But you can't know, exactly.
..Mike		365	
..Emma		366	Emma: yea, sure
..Mario		367	Mario: Sometimes it is obvious
..Mike		368	Mike: Yeah sure
..Mario		369	Mario: But I think you should not judge
..Bob		370	Bob: No, you shouldn't judge. But you know if someone asks you for a very basic question for the third time, then yeah, they are not going to keep up [shrugs]
..John		371	John: [looks skeptical]
..Mario		372	Mario: But I am gonna still answer it
..Bob		373	Bob: Yeah of course
..Emma		374	Emma: Yeah















..Moderator		375	Moderator: Ok. I'm gonna look if the other group had other stuff.
..Emma		376	Emma: But I am definitely biased towards motivated people, if you're really motivated and you don't get I want to explain it ten times
..Mario		377	Mario: Yeah
..Progress			
..Mike		378	Mike: [smiles in agreement]
..Bob		379	Bob: [nods yes]
..Mario		380	Mario: [smiles in agreement]
..Emma		381	Emma: If not the case, then "nah" I'm not going to answer your question "go away"
..Moderator		382	Moderator: Oh, yeah. There was also mentioned earlier a peak. That there are peaks when there are questions and stuff. Do you have that at some point everybody starts raising their hand?
..Tim		383	Tim: No
..Emma		384	Emma: Yes
..John		385	John: [a look of processing]
..Mario		386	Mario: Yeah, but it is kind of random, I don't think you can track it
..Question request			
..Mike		387	Mike: With the sign offs it is clear right?
..Bob		388	Bob: [nods yes] Yes
..Emma		389	Emma: Yeah
..Tim		390	Tim: [nods yes]
..John		391	John: [nods yes]
..Mario		392	Mario: [nods yes]
..Mike		393	Mike: With the sign off and everybody gets to sign off in the

..Mike			end, so there is a like like half an hour before you get to sign off. You made one mistake and you get to get in line again [hand gesture]
..Tim	394		Tim: [laughs at joke]
..John	395		John: [smiles in recognition]
..Mario	396		Mario: [smiles in recognition]
..Emma	397		Emma: [laughs at joke]
..Question request			
..Mike	398		Mike: When you don't have sign offs then there are no peaks for me at least
..Bob	399		Bob: No. One thing that helps with ___ we have determined whether it is a regular tutorial, were you can just make exercises or a sign off session. Then we prioritise the sign offs instead of the questions, so people don't take the risk of trying to make the exercises within the sign off session, because you can't ask questions.
..Emma	400		Emma: ah, yeah
..Bob	401		Bob: because you really need to be done before
..Tim	402		Tim: But why do you have to be there personally, can it not be digital? Just a sign off.
..Bob	403		Bob: Right. At ___ it is also important to make sure that people understand what they have written, so you need to ask questions about code and make sure that they have written it themselves, understand what they have written down.
..Tim	404		Tim: [nods yes]
..Mario	405		Mario: [nods yes]
..Sign off			
..Mike	406		Mike: Like how basic is the code? Is it like for loops? Or is it like some project?
..Bob	407		Bob: Well, it goes quickly, but in the beginning it is like "What is a class, what is an object?"
..Mike	408		Mike: Because if it is really basic, the code is probably really similar to other groups.

..Bob		409	Bob: yeah
..Emma		410	Emma: yeah
..Mike		411	Mike: So then you have to check if it is not copied.
..Bob		412	Bob: [nods yes]
..Tim		413	Tim: [looks interested]
..Mike		414	Mike: But if it is more of a project then people diverge more
..Mario		415	Mario: If it is a complex thing you can tell more if they have copied or not because
..Sign off		416	Mike: [nods yes]
..Mike			
..Emma		417	Emma: Basic stuff is always, yeah, a for loop it is still a for loop
..Mario		418	Mario: yeah
..Bob		419	Bob: yeah
..Emma		420	Emma: It doesn't really
..Mike		421	Mike: there are like two ways can do it and with project work you can more [hand gesture, diverge gesture]
..Mario		422	Mario: yeah
..Bob		423	Bob: exactly
..Moderator		424	Moderator: Ok. If everything could be your way, what would you improve to tutorials? What would you do differently?
..Bob		425	Bob: [smiles]
..Mike		426	Mike: [smiles]
..Mario		427	Mario: [smiles]
..Moderator		428	Moderator: What would be ideal?
..Tim		429	Tim: I have thought about it. Just to use ___ in the project. But you have project groups with eight people, so then only two of them per group do the programming. But if you need to apply

Project work

..Tim			it, that's when you really learn it I think. Just making stupid exercises, it's not gonna happen
..John		430	John: I like giving them a real problem to work on. If they have something to work towards
..Tim		431	Tim: [nods yes]
..Emma		432	Emma: yeah
..John		433	John: Like yeah
..Moderator		434	Moderator: A real life problem or?
..Emma		435	Emma: Now there making their own thing, a bit more that they have to problem solve something. Like "He, this is..., you're gonna make this."
..Tim		436	Tim: Yeah, apply it to a project
..John		437	John: [nods yes]
..Emma		438	Emma: yeah, apply it to something an assignment, or. Instead of just, now it is also fun, but they randomly make anything they want, aslong as they use certain techniques
Project work			
..Tim		439	Tim: hmm hmm
..John		440	John: [nods yes]
..Emma		441	Emma: Also a way, but I think I like John's way
..John		442	John: You know but it yeah. It is kind of what I ment with their own project is what we are doing now, with their final project, kind of thing. Because it is for ___, you don't want to take away any creative freedom. Of course, there are boundaries, to make it also easier for us and for the teacher. But if they have, if the are to restricted, they are not motivated to work on it. Then you actually get those people, who are not motivated or with a bad attitude, very late hand ins, or people who do not come anymore. And that also doesn't make it any easier for student assistants.
..Emma		443	Emma: true
..John		444	John: If you have as a student assistant, if you have the same

..John			problem over and over again and you take a look at the same problem twenty times in two hours.
Project work		445	Emma: Yeah, but like, I ment it more like, now they can do anything. And normally, at least for ___ I have the idea that most assignments are like or projects that says “Here you have a problem. Go, solve it.” And the way you solve it can go in a million ways
..Emma			
..Mario		446	Mario: yeah
..Moderator		447	Moderator: But this is more specific on ___ and I ment more how could you improve tutorials sessions in general
..Emma		448	Emma: Oh, the sessions itself
..Moderator		449	Moderator: Yeah, so the session itself. So what would you change. Like I have seen that ehh
..Mario		450	Mario: So given that the assignment is already a set? Fixed? Or would you?
..Moderator		451	Moderator: Whatever, maybe you could say “I don’t want fixed assignments at all, I want them to ...” Whatever you think would be better. In computer science they have this system in which they can sign in that they want to be in the queue to have a question. Stuff like that. Anything may go.
..Mario		452	Mario: I mean eh, in my course the assignments are tested automatically when they are uploaded. They are very strict on input and output, sometimes I have had that they want to say “ok, the result is ... “ and then print it. Instead they need to only print the number. So that kills the creativity a bit. It’s ... specially for someone who is just starting, it can be a bit demotivating
..Tim		453	Tim: [nods yes]
..Mario		454	Mario: I would do something as you said [gestures to Emma] like do a calculator, or something like that, and they have the creativity to do it. Yeah, I don’t know.
..Moderator		455	Moderator: Ok.
..Tim		456	Tim: I would switch to Python because ___ is not much used in companies

..John 457 John: [laughs]

..Mike 458 Mike: [smiles]

..Mario 459 Mario: [laughs]

..Bob 460 Bob: [laughs]

..Tim 461 Tim: It is too expensive. And that's kind of demotivating for me, because I know...

..Emma 462 Emma: were gonna do \_\_\_ and we are never going to use it again

..Tim 463 Tim: Yeah

..Mike 464 Mike: Well, with the research institutes

..Tim 465 Tim: In the academia it is used, but

..Moderator 466 Moderator: Yeah

..Mike 467 Mike: In \_\_\_ it is sometimes used, but not anymore

..John 468 John: I think the big companies, most with money. But start-ups no.

..Tim 469 Tim: But I think they are gonna do that in a couple of yers.

..Moderator 470 Moderator: Ok

..Mike 471 Mike: I would just say have enough TAs

Do's

Do's 472 Moderator: Yeah


























..Moderator

..Mike 473 Mike: it is difficult to determine how much you need, because

..Tim 474 Tim: beginning of the year vs end of the year

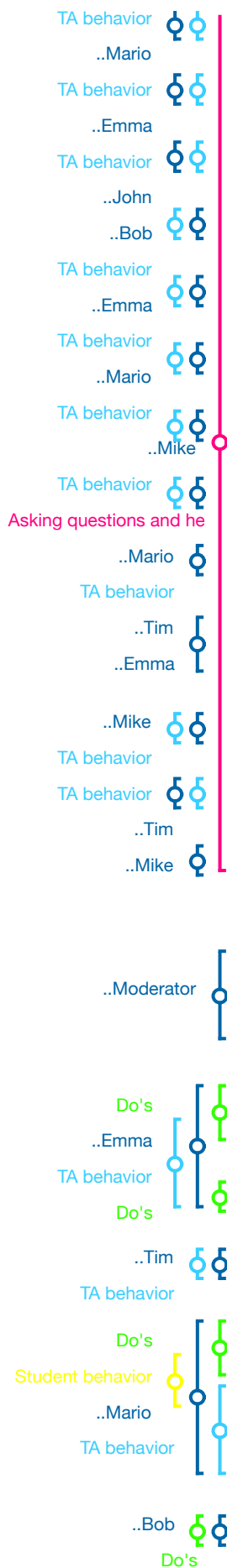
..Emma 475 Emma: It also depends on the session

..Mike 476 Mike: Because the \_\_\_ course like three years ago had like maybe 50, 40 people participating and the year afterwards it doubled. So

..Moderator		477	Moderator: And now it doubled again
..Mike		478	Mike: yeah
..Moderator		479	Moderator: You went from 40 to 100 to 240
..Mike		480	Mike: So, they're really struggling to get. Or struggling to, it is fine I guess. But last year, we like scaling up the project really helped, but that is really specific I guess.
..Mario		481	Mario: First day we didn't have enough chairs for everyone, and now we have a lot of free spaces
..Mike		482	Mike: Yeah, I guess people stop coming
Don'ts		483	Tim: I don't really see the necessity, so of course for the first two or three lectures it is useful to show up in the classroom. But after that if you just can post your questions to a TA via mail or something, that's already good enough I think. Most questions are not that hard to answer via mail
Don'ts			
..Tim			
Do's			
..Moderator		484	Moderator: So you would like an online question
Do's		485	Tim: Yeah
..Tim			
..Moderator		486	Moderator: And would you like if that was something like, eh, would you like all the students to see each others questions as well? A bit like slack?
..Mike		487	Mike: That's already implemented on blackboard right?
..Online feedback		488	Moderator: Well, you have the discussion forum
..Moderator		489	Mike: yeah, that's about it
..Mike		490	Tim: yeah
..Tim		491	John: yeah
Asking questions a		492	Emma: yeah
..John		493	Moderator: But people don't always use it
..Emma		494	Tim: It is not used for ___
..Moderator		495	Moderator: No, it's not always used, because students don't
..Tim			
..Moderator			



..Moderator			really learn how to use it, but also because it is not anonymous, and its "Kind of out there forever"
..Mike		496	Mike: yeah
Don'ts			
..Bob		497	Bob: [nods yes]
Don'ts			
..Online feedback		498	Mike: if you ask a question and it is a "stupid question" then (inaudible)
Don'ts			
..Mike			
..Mario		499	Mario: I think that especially for students that are just getting started they won't do it if it is not anonymous
Don'ts			
TA behavior			
Didactic sl		500	Mike: I think it is also difficult to determine in which degree you want to answer a question. Because lots of times I get a question and they expect me to give the answer to the question that is stated there. So obviously I can't give it to them, because they won't learn anything.
..Mike			
Student beha			
TA behavior			
Student behavior		501	John: [nods yes]
TA behavior			
..John		502	Bob: [nods yes]
..Bob			
TA behavior		503	Tim: [nods yes]
Asking questions a			
..Tim		504	Mario: [nods yes]
TA behavior			
TA behavior		505	Mike: Or at least I don't think so. So, I have to determine how much I wanna hint and give hints
..Mario			
TA behavior		506	Mario: yeah
..Mike			
..Mario		507	John: [nods yes]
TA behavior			
TA behavior		508	Tim: [nods yes] yeah that's true
..John			
TA behavior		509	Mike: So that's hard to determine for me at least
..Tim			
TA behavior		510	Bob: [nods yes]
..Mike			
TA behavior		511	Mario: Yeah, I think it is easier for helping first year bachelors they ask something about "How does this work."
..Bob			
TA behavior		512	Mike: [nods yes]
Student behavior			
..Mario		513	Mario: "Ok, maybe you should check it yourself" And you give
TA behavior			



514 them some hints

514 Emma: yeah

515 John: [nods yes]

516 Bob: [nods yes]

517 Emma: push them in the right direction

518 Mario: Exactly

519 Mike: You can ask them how far their knowledge is

520 Mario: You are not an encyclopaedia of programming

521 Tim: [smiles]

522 Emma: If that was the point we would use some AI that would automatic answering

523 Mike: So that can only be done in person right?

524 Tim: [nods yes]

525 Mike: So you can not use blackboard or...

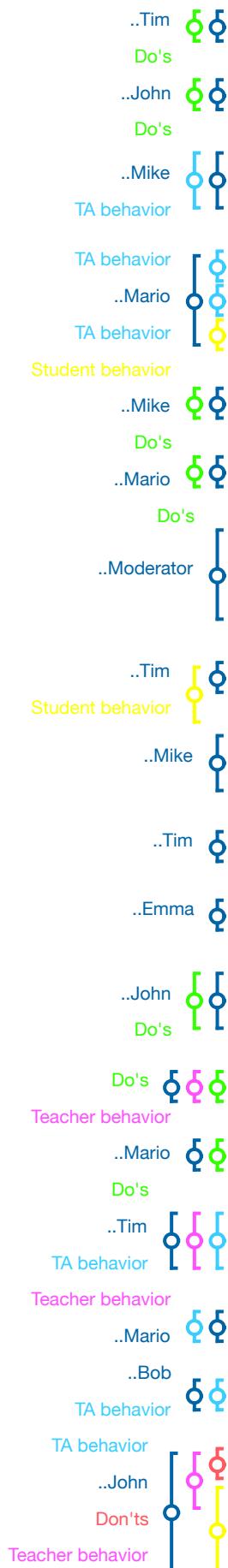
526 Moderator: Yeah, but would you like students to hand in questions? That you maybe prioritise who you want to help first? By question or?

527 Emma: I really like the freedom of answering the question. I mean there are not too many questions. So there is not a queue in my sessions, but someone raises their hand and I walk to them and start talking. I like the informality of it.

528 Tim: [nods yes]

529 Mario: Still I would like to have some sort of tracking which are the main doubts in students because now every student comes individually to you, and asks you the same. At some point it like "Oke, maybe we should write down this one" and explain it better or something

530 Bob: [nods yes]



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Tim: [nods yes]

John: [nods yes]

Mike: How do you do it when you have a lot of TAs, when you have like 20 TAs

Mario: We have a laptop and we check some categories. Maybe when they are doing the first exercises and we see “they really don’t get the loops” “they don’t get the loops”

Mike: up vote

Mario: [laughs] yeah

Moderator: That would be cool yeah if you could do that as TA. Like make some categories and upvote/downvote them if they are asked a lot.

Tim: Yeah, but mostly the questions are every year the same

Mike: Well if the course stays the same, sure. But if the course like changes

Tim: yeah

Emma: yeah

John: But with like a tracking system I guess you have material to improve your course with

Mario: yeah, for the course lecturer right

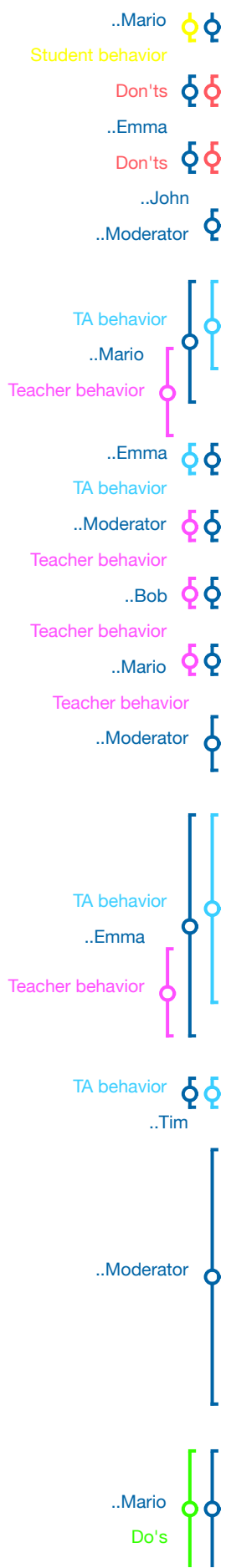
Tim: yeah, but its

Mario: this year we saw, or you could give some more clarifications of it.

Bob: [nods yes]

John: [nods yes]

Mario: I mean it is always the problem when you have someone really experienced with something they will assume, and then it becomes really difficult to communicate with someone who



548 had never anything to do

549 Emma: yeah true

550 John: [nods yes]

551 Moderator: yeah

552 Mario: I think it is easier for student assistants who have done it last year or a couple of years ago, it would be easier, because you know which struggles you had instead of you know some 40 year old teacher who has been working for years

553 Emma: hmm hmm

554 Moderator: Teachers actually say the same

555 Bob: [nods yes]

556 Mario: yeah [nods yes]
























557 Moderator: That's why they like student assistants so much, because they learned the knowledge not so long ago.



















558 Emma: yeah I can understand that. For me it is sometimes a problem because it is something that I would normally just do and now I have to think about "why" and "how" and explain it to them. And I stand there for like 30 seconds thinking about what I am going to say. So I can understand that for a teacher it has a real struggle with that, explaining things that seem logical.

559 Tim: Sometimes it is the other way around.

560 Moderator: We don't have that much time anymore. So we are going to continue to another set of questions. And it is about a system that would help with the tutorial sessions. For instance where they could get themselves in a digital queue. What features would you like as a student assistant? Would you like the queue to prioritise for you? Or would you like to see who is waiting the longest and then maybe see the categories of what they are doing and choose by yourself who is next?

561 Mario: I would definitely look for something that would merge the questions let's say if different people ask about the same topic, more or less you can give a single answer to all the

..Mario			doubts in all the questions, as supposed to write in all the separately
Do's			
Do's		562	Emma: yeah
..Emma			
..Mike		563	Mike: We are talking about really only online stuff right now? Not in person?
..Moderator		564	Moderator: No, this is, were you would be maybe in person in the tutorial session but that you have a laptop or an application which you can view on your mobile
..Mike		565	Mike: Ah
..Moderator		566	Moderator: so a system that could help you be a better TA. What would you like from such a thing?
..Tim		567	Tim: No, queue, at all [smiles]
Do's			
..Bob		568	Bob: [laughs]
..John		569	John: [laughs]
..Mario		570	Mario: [laughs]
..Moderator		571	Moderator: No queue at all?
..Tim		572	Tim: No, it is inefficient
Don'ts			
..Moderator		573	Moderator: But now student sit and wait with their hand up
..Tim		574	Tim: yeah when you have a shortage of TAs I think
TA behavior			
Don'ts		575	Moderator: yeah
..Moderator			
..Tim		576	Tim: or it is not clear
Don'ts			
..Mario		577	Mario: Yeah I think that is mainly the problem. If they have to wait to long the problem is you don't have enough TAs
Don'ts			
..Tim		578	Tim: and if they have to wait to long they ask their study mate, and don't come to the tutorials anymore
Student behavior			
..Emma		579	Emma: yeah if they don't get any help
Student behavior			
..Tim		580	Tim: yeah or if it takes too long
Student behavior			

..Mario Do's		581	Mario: If the thing would make it more efficient so you can work faster. <b>It should safe time in some way</b>
..Tim Do's		582	Tim: <b>yeah</b>
..Mike		583	Mike: I don't see the benefit of the system right now
..Moderator		584	Moderator: Well the benefit is; if you are with you hand up in the air, you only have one hand left. You cannot program with one hand
..Mike		585	Mike: oh sure
..Moderator		586	Moderator: So the they'll be waiting and
Don'ts ..Mike		587	Mike: <b>they are not productive anymore</b>
..Moderator		588	Moderator: exactly. So the student is waisting time in the very limited space of tutorial time
Don'ts ..Tim		589	Tim: <b>[nods yes]</b>
Don'ts ..Mario		590	Mario: <b>[nods yes]</b>
..Moderator		591	Moderator: So if you could say like, I have a question about question three and or "I'm stuck at question three" And then they could work on another question
Student behavior ..Tim		592	Tim: <b>That's in our case, because we walk around and if they are stuck with one question they go on with another question and if they see "He your walking around" then they [raises hand]</b>
TA behavior ..Mario Don'ts		593	Mario: <b>I am afraid of bad use. Like: Everybody goes into the room, everybody sits and everybody puts themselves in the queue.</b>
Don'ts ..Tim		594	Tim: <b>[laughs]</b>
..Moderator		595	Moderator: Yeah, yeah
Don'ts ..John		596	John: <b>[smiles in acknowledgement]</b>
Don'ts ..Mike		597	Mike: <b>[smiles in acknowledgement]</b>
..Mario Student behavior		598	Mario: <b>because they know they are gonna wait</b>

Student behavior  
..Emma  
Do's

599

Emma: I think if they can say which questions they have problems with, that would be nice. Because if it is one question that then people have a question about then you could get them to you and explain the question

..Mike  
Do's

600

Mike: yeah

..Tim  
Do's

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Tim: yeah

..Emma  
Do's

602

Emma: that could be more efficient if there are a lot of questions about a specific questions

..Bob  
Do's

603

Bob: [nods yes]

Do's

604

Mario: [nods yes]

..Mario

..Tim  
Do's

605

Tim: [nods yes]

..John  
Do's

606

John: And how about a feature: if they have like a programming problem that they cannot solve themselves, a feature that describes their problem very briefly and that automatic google that next best (inaudible) responses

..Bob  
Do's

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Bob: [smiles]

Do's

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Tim: [laughs] [smiles]

..Tim

..Mario  
Do's

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Mario: [looks interested at John]

Do's

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Mike: [smiles]

..Mike

611

John: Because the thing is

..John

Student behavior  
..Mario

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Mario: Sometimes they don't know how to google the

Student behavior  
..John

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John: Exactly

Student behavior  
..Emma

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Emma: yeah

Student behavior  
..Emma

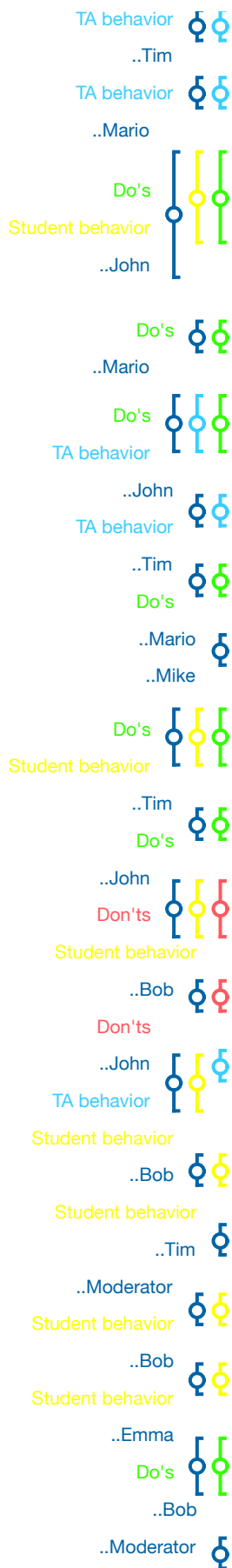
615

Emma: also select what the problem is

TA behavior  
..John

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John: But the first two or three weeks, I tell all students "Have you googled it?, because there is always someone who posted this problem on stack exchange and has received help"



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Tim: [nods yes]

Mario: Yeah, stack overflow is your friend

John: And as soon as they realise that their question is easy enough and is been googled for them , they start googling it themselves maybe. I'm not sure, maybe that's a thing to explore.

Mario: Yeah

John: And also so that you can focus as a student assistant on more difficult questions

Tim: [looks skeptic]

Mario: [nods yes]

Mike: Like ideas about (inaudible)

Tim: Yeah but they have to learn about how to google, or look up documentation, that's the first three weeks

John: Yeah

Bob: One more thing that could be very nice, because I think students are sometimes shy to ask questions

John: [nods yes]

Bob: in my experience they only ask questions when they are truly blocked on the problem

Tim: [smiles] When they are sure

Moderator: Hmm hmm

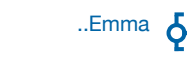
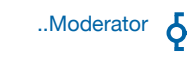
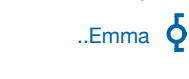
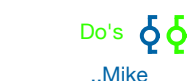
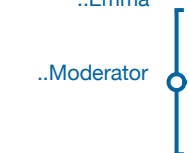
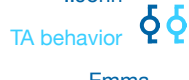
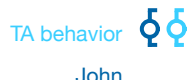
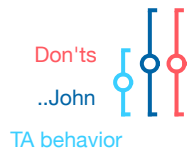
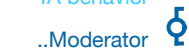
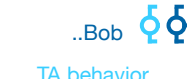
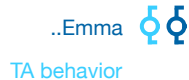
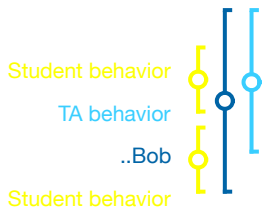
Bob: or something they get, in case of computer science.

Emma: yeah

Bob: It would be nice to...maybe like sort on questions that have really short answers

Moderator: Yeah





636 Bob: I mean can't predetermine the answer but I do encounter sometimes that somebody waits for ten minutes and really can't progress and I look at their code for five seconds and than [points] "Oh that's wrong" And then they are gonna go home

637 Mike: Yeah,

638 Bob: It would be nice if you can

639 Emma: "There is a curly bracket extra, remove it"

640 Bob: yeah, like that

641 Moderator: Ok

642 John: And the problem I realised that you have with a digital queue, so people keep seated, as a student assistant you might not always know where people are sitting

643 Emma: yeah

644 John: You would need a "Smoelen boek"

645 Emma: or call their name

646 Moderator: Yeah call their name is one thing they do if they have a white board where the students write their names on. And the computer science uses the TA system, that one gives a pop-up to the student, it's your turn, raise your hand

647 John: [looks interested]

648 Mike: [looks interested]

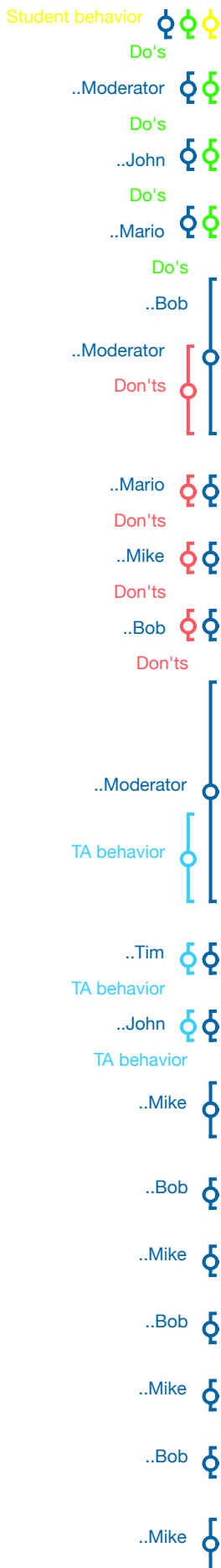
649 Emma: I need to go to eat before my next TA job

650 Moderator: That's fine thank you for coming

651 Emma: No problem [Emma leaves]

652 Mike: Maybe you could have some sort of labels per question like: Is it syntax, is it like programming semantics or some other stuff.

653 Moderator: Yeah, I think it would also be good for them to learn



“What kind of questions do I have?”

654

John: [nods yes]

655

Mario: [nods yes]

656

Bob: [nods yes]

657

Moderator: To ask, maybe. Do I need to ask you something different from the other group [looks in notes] They were really specific that they didn't want to become a code reviewer, that students would post their full code and ask “What's the problem?” That kind of questions.

658

Mario: [shakes no]

659

Mike: yeah

660

Bob: yeah

661

Moderator: I think this is it. I'm gonna do a quick summary of what we discussed and you can correct me if I'm wrong. We started with an introduction. Then we discussed how tutorials progress, so what happens and also the responsibilities of the TA. Namely, being there, answering questions, preparing, the hackathon, control the platform if there is a system, and also know the organisational stuff, that was a new one I liked that

662

Tim: Also installing the software, they expect that from you

663

John: [nods yes]

664

Mike: Question in general. Do you put in the hours in ut flex for preparing also?

665

Bob: yes

666

Mike: How much can you...

667

Bob: fifty

668

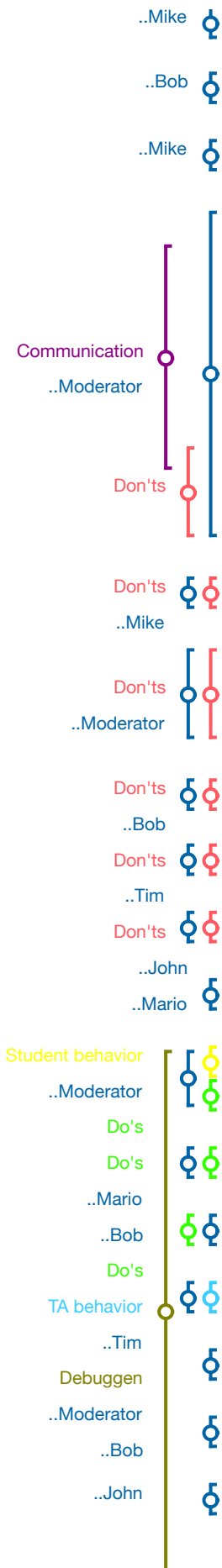
Mike: fifty percent?

669

Bob: smiles

670

Mike: So if you do two sessions of four hours, how many hours



do you prepare?

671 Bob: Usually I just always declare fifty percent

672 Mike: I was just curious, because that was not clear

673 Moderator: You should be rewarded for all the hard work. I am gonna finish the summary. Then, we talked about how you communicate as student assistants, with students the teacher and stuff like that. Mainly face to face, there was one whatsappgroup with TAs, and generally one TA communicates with the teacher and sometimes there are meetings between the TAs and the teacher, and if there is communication via email, and sometimes students send a facebook message. The main frustrations were assignment sets that suck or were not clear

674 Mike: [nods yes]

675 Moderator: Also getting 100 lines of code and then you have to find the solution for the student, they expect you to perform miracles .

676 Bob: [nods yes]

677 Tim: [nods yes]

678 John: [nods yes]

679 Mario: [smiles]

680 Moderator: The student should know more about debugging. This should be earlier on in the programming courses.

681 Mario: [nods yes]

682 Bob: [nods yes]

683 Tim: [smiles] Yeah thats what we do in the first three weeks

684 Moderator: You do? Ok, and the others?

685 Bob: [shakes no]









686 John: [shakes no]

..Mario		687	Mario: [shakes no]
Debuggen			
..Moderator		688	Moderator: So one of them
Do's		689	Mario: Yeah we are definitely missing that
..Mario			
TA behavior		690	Tim: yeah we learn them to look up the documentation and
..Tim			
TA behavior		691	Mike: So now it is your [points at Mario] job to teach them
..Mike			
..Mario		692	Mario: Yeah, I also worked as a tester for a year and a half and now I realise how useful it is
TA behavior			
TA behavior		693	Mike: because fifty procent of the time your programming your debugging
..Mike			
Debuggen			
..Moderator		694	Moderator: Yeah
..John		695	John: [nods yes]
Student behavior		696	Mario: yeah, I mean it's kind of in the manual how to debug but they don't really use it
..Mario			
Do's		697	Moderator: It should be mandatory
..Moderator			
Do's		698	Mario: But better would be a mandatory assignment that they need to debug
..Mario			
..Moderator		699	Moderator: Other thing that we had were that sometimes students had to wait for more than half an hour. And the peaks, when sometimes a lot of questions come at the same time.
Student behavior			
Asking questions a		700	Mario: [nods yes]
Student behavior			
..Mario		701	Bob: [nods yes]
Student behavior			
..Bob		702	Moderator: Especially with sign offs, that was one thing that frustrated. People with a bad attitude and the students that don't really do the assignment. The lagging in assignments wasn't always the problem except when student were lazy and didn't try at all.
Sign off			
Don'ts			
..Moderator			
Don'ts			
..Progress			
..Tim		703	Tim: [looks sceptical]
..Mike		704	Mike: [looks sceptical]

<p>Do's</p> <p>Project work</p> <p>..Moderator</p>	<p>705</p>	Moderator: What could be improved? Applying it in a project, more problem solving was something that was mentioned, switching to python
<p>..Bob</p>	<p>706</p>	Bob: [laughs]
<p>..Tim</p>	<p>707</p>	Tim: [nods yes] [smiles]
<p>..Mario</p>	<p>708</p>	Mario: [smiles]
<p>..Moderator</p> <p>Do's</p>	<p>709</p>	Moderator: Having enough TAs that is obviously a good one.
<p>..Moderator</p> <p>Do's</p>	<p>710</p>	Moderator: Then we talked about posting your questions and we discussed how it could be managed. What you would like, but also that questions are easier to explain face to face, that online. So, students should be posting but not solving them online.
<p>TA behavior</p> <p>..Mario</p>	<p>711</p>	Mario: Because sometimes the real question is not the one that they ask, but there is a question inside their question that you need to pull out
<p>..Tim</p>	<p>712</p>	Tim: [smiles]
<p>Do's</p> <p>..Moderator</p>	<p>713</p>	Moderator: Yeah. And also one thing that was mentioned that it would be nice if questions could be categorised
<p>Do's</p> <p>..Bob</p>	<p>714</p>	Bob: hmm hmm [nods yes]
<p>..Moderator</p> <p>Don'ts</p>	<p>715</p>	Moderator: Someone said that they did not want a queue at all, because then you have too little TAs
<p>Do's</p> <p>..Moderator</p>	<p>716</p>	Moderator: If there would be a system that would solve your problems than it should save time and not add time to your work
<p>..Bob</p> <p>Do's</p>	<p>717</p>	Bob: [nods yes]
<p>..Moderator</p>	<p>718</p>	Moderator: There was a part about googling questions. But I did not really get that one
<p>..Tim</p> <p>Programming vocabu</p>	<p>719</p>	Tim: Just help yourself
<p>..John</p>	<p>720</p>	John: Yeah
<p>..Moderator</p>	<p>721</p>	Moderator: Yeah, but would you want that a student asks a

..Moderator			question and that they get back “Oh you should do something like [hand gesture] this”
..John		722	John: Yeah
..Mike		723	Mike: Maybe with syntax errors?
..John		724	John: Or maybe, yeah, sometimes when they are searching for an algorithm or maybe..., when I have a programming issue, what I always do is google it. What a lot of students do, when you only have three weeks of programming experience, you don't really know how to google it. So what is nice is to see some examples of how do you google.
Student behavior			
Do's			
..Mario		725	Mario: yeah
Do's		726	John: Because googling is a very important of being a programmer.
..John			
..Mike		727	Mike: You can also read the book, but googling is faster right?
Do's			
..John		728	John: Yeah, well no, not all answers are in the book
Don'ts			
Programming voca		729	Mario: I totally agree
Do's			
..Mario		730	Tim: [nods yes]
Do's		731	Mario: Because sometimes you need a bit of knowledge to know how to properly do a google search that gives you a good result
..Tim			
..Mario		732	John: Yeah
Do's			
..John		733	Mario: Like the proper stack overflow questions or if you just put the some words it would give you tons of different questions about the problem
Do's		734	John: [nods yes]
..John			
..Mike		735	Mike: “Type of phrase feedback”
..Mario		736	Mario: Yeah
..Tim		737	Tim: [smiles]
..Moderator		738	Moderator: It could be done, like a mini lecture or type of

..Moderator			syntax error questions if you have a problem, what steps do you have to take, because that is not logical to do that as a TA all the time
..Mike		739	Mike: But I would still say like more of a beginning or in the bachelor kind of thing and then later on you don't do that anymore, because you expect people to know how to solve problems themselves
Don'ts			
Do's		740	John: I think in our programming course it should be included and in yours [pointing at Mario]
..John			
Do's		741	Mario: Yeah definitely, like sometimes they don't know how to use a function I'm like "come on you have the function online" there is a website ____.com or like that
Programming vc			
Student behavior			
..Mario		742	Tim: "And just read it"
TA behavior			
Student behavior			
..Tim		743	Mario: yeah the inputs and how to use it
Do's			
..Mario		744	Mike: So not only how to google, but also how to look into the documentation
Do's			
..Mike		745	John: [nods yes]
Do's			
..John		746	Mario: yeah
Do's			
..Mario		747	Moderator: Oke that was the summary. I only have two questions left for you. In the last group it was really interesting, non of the TAs had any educational diploma. So I was wondering has any of you had a course in how to teach?
..Moderator			
..Bob		748	Bob: Not as a course, but I did have a training. I don't remember with who.
..Tim		749	Tim: I had a little bit of that for being a tutor for a project group, but not for being a TA
Didactic skills			
..Moderator		750	Moderator: interesting
..Mario		751	Mario: I think it depends on a lot on the kind of thing that you are teaching. Like sometimes it is good enough if you are just a student who had like two years ago and sometimes...
..Mike		752	Mike: Exactly you don't need it all the time

..Tim		753	Tim: You don't need to give a lecture or something
..Moderator		754	Moderator: no, but you are helping them
Didactic skills			
..Mike		755	Mike: But how to explain things... [looks skeptical]
..Mario		756	Mario: That would be beneficial for sure
..Moderator		757	Moderator: Last question: I did the summary, did you miss things that we didn't discuss or is there something that I should take into account?
..Bob		758	Bob: I don't think so
..Moderator		759	Moderator: Than I would like to remind everyone, that this was an anonymous session. So, you may talk with other people about you said in here, but not about what the rest said in here. Just to respect everybody's anonymity. That's it I will give everyone a new name, so if you want a cool name you can still choose one.



# Coding of the focus group interview with students

In appendix P has the transcription of the focus group interview with two students. In figure O.2 the code system of the interview is shown in a code matrix.

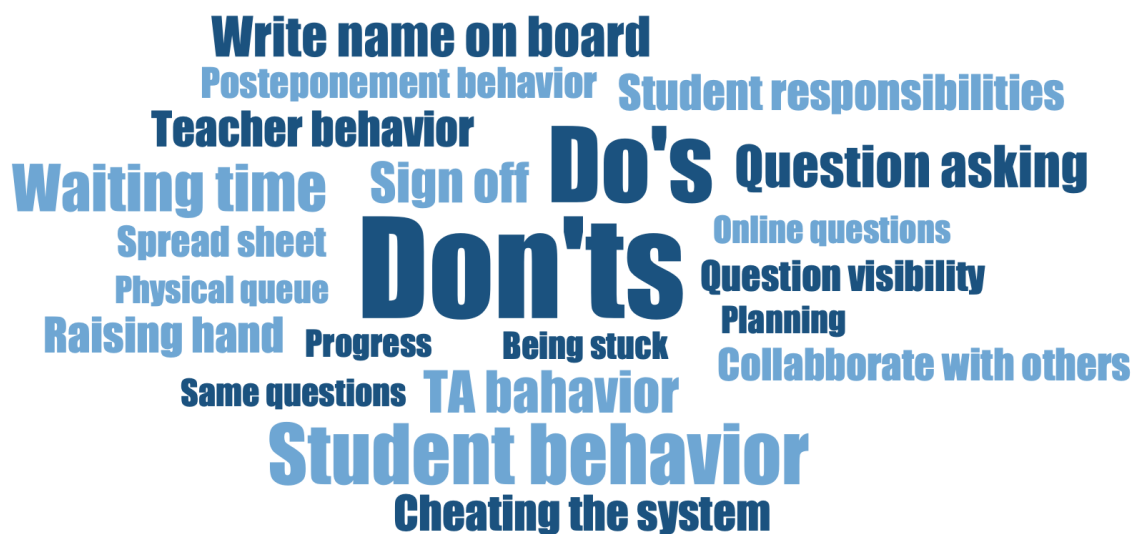


Figure O.1: Word cloud of the Students focus group




























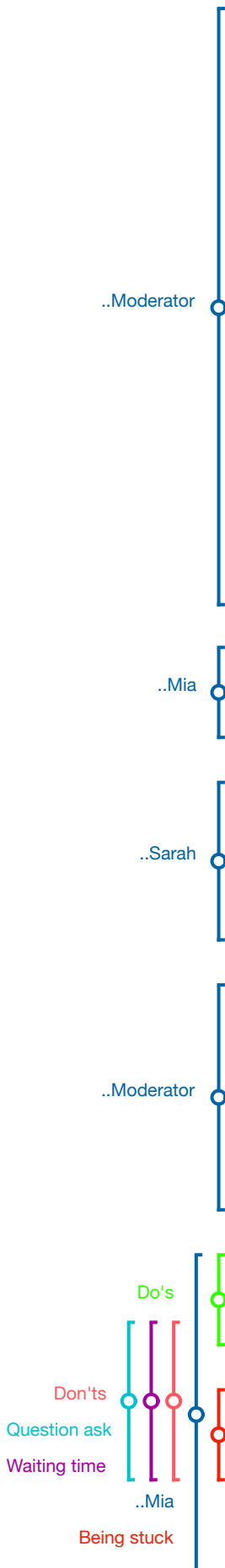
Code System	S_FG_1	SUM
 Teacher behavior	■	5
▼  TA bahavior	■	8
 Student behavior	■	15
▼  Sign off	■	7
▼  Posteponelement behavior	■	3
 Student responsibilities	■	5
▼  Difference in workspeed	■	1
 Planning	■	2
 Progress	■	2
 Waiting time	■	10
 Vague questions	■	1
 Being stuck	■	2
▶  Cheating the system	■	5
 Question asking	■	8
 Spread sheet	■	3
 Same questions	■	2
 Online questions	■	2
 Raising hand	■	5
 Collaborate with others	■	4
 Physical queue	■	2
 Write name on board	■	7
 Question visibility	■	3
 Intro		0
 Don'ts	■	31
 Do's	■	21
 S_FG_1	■	103
 SUM	257	257

Figure O.2: Code matrix of the focus group interviews with Students

## Appendix P

# Focus group interview with Students



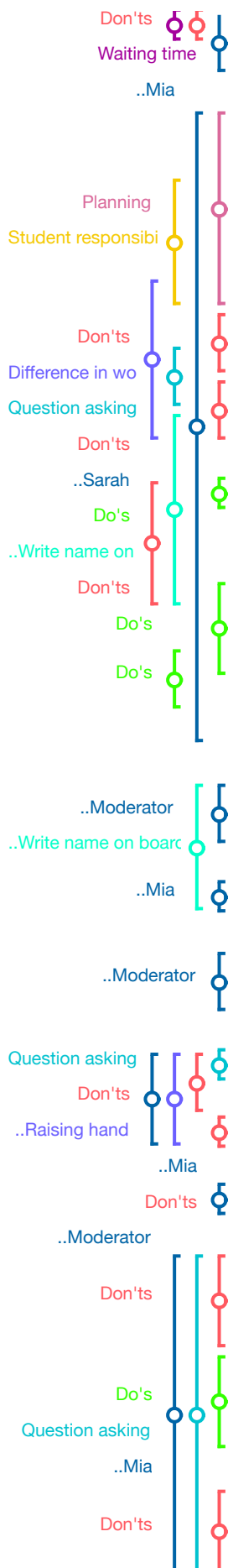
1 Moderator: We kennen elkaar al dus, ik hoef me niet voor te stellen, dat scheelt alweer wat tijd. Wat ik wil is van jullie weten hoe jullie werkcolleges hebben ervaren waarin geprogrammeerd werd. Waarbij je achter de computer opdrachten moest oplossen. Omdat het een groepsinterview is zijn er ook wat regels bij. Je mag hier in discussie met elkaar gaan, maar het is handig als jullie niet door elkaar gaan, want dat kan de camera niet opnemen. Het is niet de bedoeling dat jullie het alleen maar met elkaar eens zijn, je mag het ook oneens zijn, maar als je het wel eens bent met elkaar moet je het ook laten weten, want dan kan ik zeggen van "honderd procent was het eens". De video opname wordt alleen door mij en eventueel mijn begeleidster. Verder, dit is niet een test, dan weet je dat, er zijn geen verkeerde antwoorden. Ik ben gewoon geïnteresseerd in wat je denkt en voelt en wat je zoal hebt meegemaakt. Dan kunnen we met de introductie ronde beginnen. Vertel aan de rest hier wie je bent, wat voor een programmeer colleges je hebt meegemaakt.

2 Mia: Ik ben Mia, ik studeer \_\_\_ en nu een module \_\_\_ ik heb ervaring met solid works, spss, maya en Matlab. Dit zijn de werkcolleges die ik heb gehad met programmeren en laptops.

3 Sarah: Ik ben Sarah ik studeer \_\_\_ in de bachelor en ik doe een minor in dezelfde richting, dus dat doet er niet zoveel toe. Ik heb vooral programmeer colleges gehad in Matlab en een beetje in specifieke programma voor mijn studie. Maar voornamelijk Matlab.

4 Moderator: Ok. Even kijken, we gaan het dus hebben over werkcolleges en dan voornamelijk die waar je achter de computer zit. Je mag ook voorbeelden pakken uit andere werkcolleges die je hebt gehad, maar dan moet je daarbij vermelden dat je daar dan niet een computer gebruikte. Kan je me vertellen hoe je werkcolleges normaal gesproken gaan en wat je er goed aan vind en slecht aan vind.

6 Mia: Ik vind het altijd fijn dat het meestal wel gezamenlijk start, dus dat je eerst de opdracht krijgt en heel even kort door gaat wat je moet gaan doen. Wat ik eigenlijk altijd heel vervelend vind dat je op het moment dat je een vraag hebt dat je heel lang moet wachten totdat die vraag beantwoord is en dat je dan meestal ook niet verder kan met je programma omdat je dan echt die stap eerst moet hebben gedaan voordat je verder kan. Dus als je iets niet achter de computer hebt dan kan je meestal nog iets anders doen, maar nu is het echt zo je zit gewoon vast



7

dus als dat dan een kwartier duurt is dat echt vervelend. Verder ja denk ik wel dat dat is wat goed en niet goed is.

Sarah: Wat bij ons in werkcolleges vaak zo was, is dat je niet perse een vaste planning hebt voor een werkcollege hebt dus dat je niet echt gezamenlijk opent en dan iets gaat doen. Maar dat je over het algemeen een rits opdrachten hebt wat je moet doen over de hele module en waar je dan verschillende werkcolleges voor hebt om dat te doen. Maar dan merk je gewoon dat de een ligt heel vel voor op de ander, dus je bent niet echt op het zelfde punt, dus aan elkaar heb je niet zoveel en je moet je hand weer opsteken, maar dat heeft ook niet zoveel zin. We hebben wel eens gehad dat als je een vraag had dat je je naam dan op het bord moest schrijven, of om iets af te tekenen bijvoorbeeld. Dat werkt op zich wel, behalve dat op een gegeven moment het hele bord vol staat met namen en dat je dan aan het eind van het college nog niet aan de beurt bent geweest. Waarbij ik voor mezelf dan merk dat ik dan soms liever thuis ga werken en als ik ergens niet uit kom dat ik dan naar college ga. Omdat ik me gewoon in mijn eentje beter kan concentreren dan in een zaal vol studenten, maar dat is denk ik ook het gevolg van hoe het is op gezet.

8

Moderator: Ok. Je noemde het bord waarop je dat kon aangeven. Heb jij dat wel eens gehad? [kijkt Mia aan]

9

Mia: Nee eigenlijk niet

10

Moderator: Andere manieren waarop je kon aangeven dat je vragen had?

11

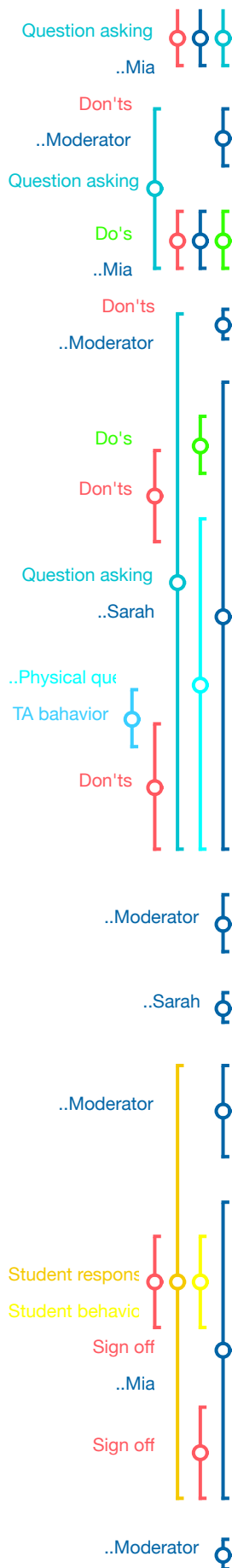
Mia: Gewoon je hand opsteken. Gewoon zo lang mogelijk je hand opsteken [Lacht ongemakkelijk] dan kom je uit eindelijk aan de beurt. [kijkt ontevreden]

12

Moderator: Ja

13

Mia: Dat is ook nog een ding als je aan het einde van het college een vraag hebt heb je nog de kans dat het niet beantwoord wordt. Wat ik inderdaad op een gegeven moment heb gedaan is niet meer naar de werkcolleges gaan en als ik dan vragen had wel gaan en die in het begin van het college stellen, omdat dan nog niet zoveel mensen vragen hebben. Omdat bij ons wel vaak in het college de opdracht werd gegeven om die dag te maken, dan is het zo dat er rond het zelfde tijd er vragen zijn, want dan is het zo dat er dingen zijn



waar dezelfde mensen op vast lopen en dan zijn er opeens heel veel vragen tegelijkertijd.

14 Moderator: Dus dan ga je naar het volgende werkcollege om vragen te stellen over het vorige werkcollege?

15 Mia: Ja, omdat ik dan minder het gevoel heb dat ik mijn tijd zit te verdoen.

16 Moderator: Heb jij dat ook wel eens gedaan? [kijkt naar Sarah]

17 Sarah: Ja of dan inderdaad vooruit werken en kijken waar je problemen hebt. Of inderdaad het volgende werkcollege dan maar vragen stellen, want inderdaad als je pas in het werkcollege begint met werken en dan een vraag tegen komt ben je meestal gewoon een uur kwijt en in de achtste module hadden we een module samen met \_\_\_ toen moesten we ook programmeren en toen had je ook dat er twee of drie student assistenten voorin de zaal zaten en dat waren dan die kleine zalen in Carre op de derde verdieping en die zijn dan wel wat kleiner maar dan had je alsnog dat je met een stuk of veertig studenten in die zaal twee student assistenten deelde en als je dan een vraag had moest je fysiek in de rij gaan staan. Dus dan loop je ook sowieso vast, want als je daar dan staat met je laptop kan je sowieso niet verder.

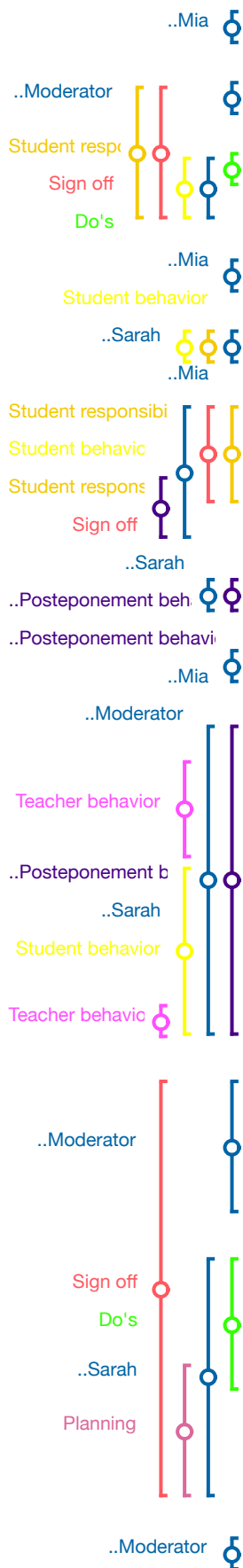
18 Moderator: Je zei twee student assistenten per veertig studenten?

19 Sarah: Ja ongeveer

20 Moderator: Ok. Wat wordt er van je verwacht tijdens een werkcollege? Weet je dat een beetje? Wat moet een student doen?

21 Mia: Bij ons is het wel vrij duidelijk. Bij die solid works colleges is het wel heel erg duidelijk, van, dit zijn de opdrachten die je moet doen en er wordt van je verwacht dat je die aan het einde van het college hebt afgetekend. Maar nu merk ik dat het bij \_\_\_ dat veel minder is want je krijgt daar wel opdrachten met "Dit moet je deze week doen" maar of je het nou in het werkcollege doet of niet. Er wordt niet echt gezegd "Je moet dit nu doen" en bij \_\_\_ moet je het echt af hebben voor je mag gaan. Nouja niet echt je mag niet weg...

22 Moderator: maar het moet wel afgetekend worden



23

Mia: ja

24

Moderator: Wat vind je fijner?

25

Mia: Dat hele duidelijke. Want dan ga ik ook echt dingen doen. In plaats van dat ik denk oke ik zit hier voor niks. [glimlacht]

26

Sarah: [glimlacht terug]

27

Mia: En ik kan het ook gewoon in de laatste week doen

28

Sarah: Wij hadden dan niet dat je altijd iets moest aftekenen, maar het dan wel zo was dan moest dat vaak ook op het einde van de module. [lacht] Waardoor je dus ook krijgt dat mensen aan het begin uitstellen, want zo zijn studenten. [lacht]

29

Mia: [lacht instemmend] Ja zo zijn studenten

30

Moderator: Die hebben dan nog andere prioriteiten.

31

Sarah: Ja er wordt op het begin dan een beetje uitgesteld en docent die waarschuwt daar ook meestal voor die zegt ook "Ja oké houd het nou gewoon bij, want aan het eind wil iedereen het aftekenen en dat weet ik en dat weten jullie net zo goed." Maar ja ook al krijg je zo een waarschuwing dan begin je goed en heb je de eerste dingen afgetekend [kijkt trots] maar dan duurt het ook wel even voordat je die tweede ook hebt afgetekend. En daardoor heb je op het einde zeg maar zo'n "rush" op zo'n docent waardoor die ook weer heel druk is.

32

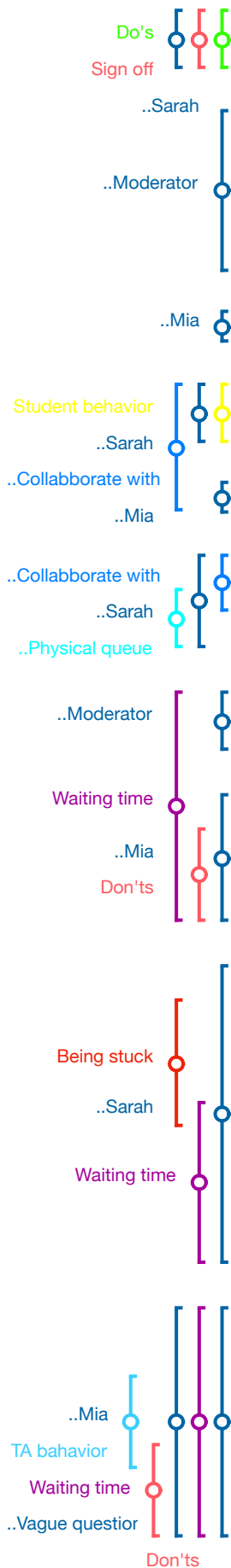
Moderator: En een, als je dan hoort van Mia noemt dat ze dan elke week moest aftekenen en dat prefereert. Heb jij dat dan ook? Of vind je juist dit fijn, met op het einde pas aftekenen en zelf inplannen?

33

Sarah: Aan de ene kant klinkt het wel fijn omdat je dan inderdaad niet dat gedoe hebt aan het einde, maar aan de andere kant vind ik dat zelf inplannen ook niet een verkeerd iets. Want stel je hebt een tentamen of zo, of je hebt nog een ander project dat er tussendoor loopt dan kan je dat voor jezelf gewoon plannen. Dat vind ik zelf opzicht wel fijn ondanks het soms wel stress oplevert op het einde.

34

Moderator: hmm hmm ja



35

Sarah: Maar ik denk dat het wel efficiënter werkt dan wanneer je wacht tot het einde

36

Moderator: Ok. Je [wijst Mia aan] noemde al dat als jij een vraag hebt dat je je hand op moet steken en [wijst naar Sarah] jij noemde dat jullie soms op het bord moeten schrijven. Zijn er nog andere manieren waarop je vragen kan stellen of hoe je dat doet tijdens colleges?

37

Mia: Niet echt

38

Sarah: Ja wat ik meestal doe is gewoon gaan puzzelen met andere studenten of we er zelf uit komen

39

Mia: ja

40

Sarah: En kijken of een ander iemand er al voorbij is en kijken of die misschien wil uitleggen en inderdaad gewoon in de rij gaan staan

41

Moderator: Ok, even kijken. Is er tijdens een werkcollege genoeg tijd om een vraag te stellen

42

Mia: Ja ligt er aan meestal is er aan het begin wel tijd, maar soms heb je aan het einde een vraag en dan kan het gewoon niet meer omdat er gewoon geen tijd meer is. En verder duurt het gewoon echt heel lang, en dat is echt vervelend

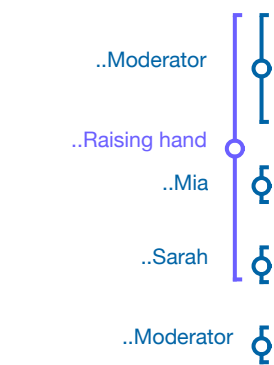
43

Sarah: Ik denk dat het probleem bij programmeer colleges is dat je een vraag stelt die niet per se aan jezelf hoeft te liggen. Het kan ook zijn dat er in het programma iets mis gaat of je iets net fout hebt geschreven waardoor het best wel lang kan duren voordat je het hebt opgelost. Dus dat het niet per se de methode is die uitgelegd moet worden, maar dat er daadwerkelijk een foutje gezocht moet worden in het hele programma. Dat kan wel gewoon lang duren. Waardoor er veel tijd verloren gaat en waardoor er uiteindelijk ook tijd gebrek is.

44

Mia: Wij hebben we eens gehad dat er in de uitleg het net vaag stond, waardoor iedereen daar vast liep om dat het niet goed uitgelegd stond. Waardoor de student assistent de hele tijd de zelfde vraag moest beantwoorden en dat dan in een zaal van honderd man. Naja dan duurt het wel even voordat je die vraag bij iedereen hebt beantwoord. Daar kan het misschien ook wel beter in.





45 Moderator: Ok. Heb je dit wel eens meegemaakt, dat je in een werkcollege de hele tijd met je hand omhoog zit te wachten op hulp?

46 Mia: [knikt ja] Ja best wel vaak ook

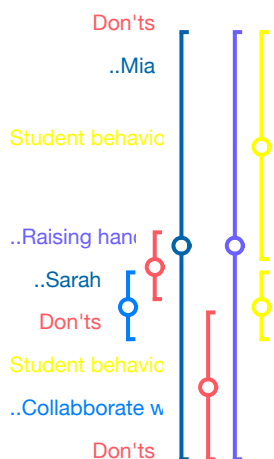
47 Sarah: Ja

48 Moderator: En hoe vind je dat? Hoe voel je je daarbij?



49 Mia: Een beetje ongemakkelijk, want je zit dan een kwartier met je hand omhoog en heel nutteloos voelt het altijd

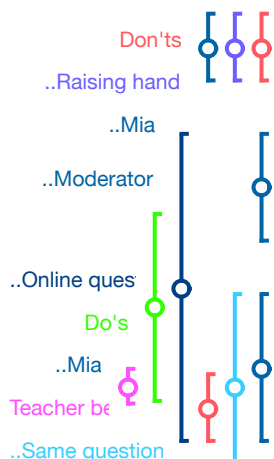
50 Sarah: Ja, ik vind dat dat bij mij ook de drijfveer is van "Oke, dan doe ik het wel ergens anders." En dan als ik een probleem heb dan kaart ik dat later wel aan als dat kan. Ja soms heb je programma's waar je het probleem eerst moet oplossen voordat je verder kan gaan, maar ja meestal probeer ik dan wel als ik mijn hand omhoog heb nog een beetje door te zoeken, maar dat is wel lastig met 1 hand. En anders met je hand omhoog met iemand anders gaan overleggen, maar dat voelt altijd wel een beetje suf want zolang kan je je hand ook niet omhoog houden. Tenminste ik niet. Dus dan zit je een beetje [Laat een slap hangende arm omhoog zien]



51 Mia: Ja [lachend] en met je andere hand, je linker hand kan je helemaal niks op je computer.

52 Moderator: Ja, ok. Stel dat er een andere manier zou zijn om vragen te stellen, zou je het dan fijn vinden om digitaal je vraag in te sturen? Of zou je daar problemen mee hebben?

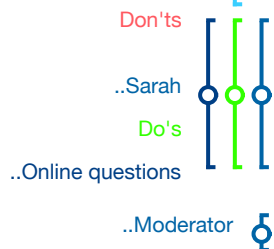
53 Mia: Nee ik denk het niet. Ik denk eigenlijk juist op het moment dat je dat kan doen en heel veel mensen hebben dezelfde vraag dan kan dat eventjes centraal behandeld worden, in plaats van dat dat iedereen apart wordt uitgelegd.

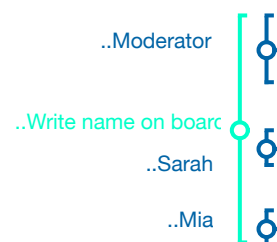
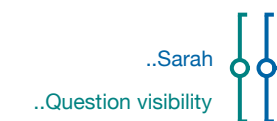
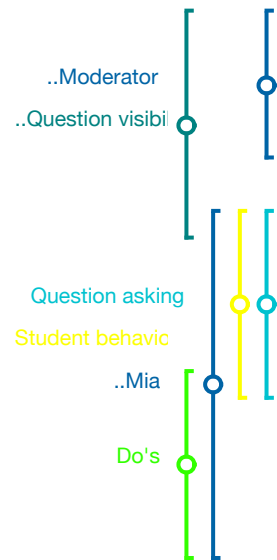


54 Sarah: Ja ik denk dat het wel prettig zou zijn. Dan alleen denk ik wel onderscheid maken in wat voor een categorieën die je hebt. Dus ja het kan iets zijn wat je niet begrijpt in het programma, maar het kan dus ook een error zijn.

55 Moderator: Ja wat een goeie

56 Sarah: Dat is dan misschien wel fijn om aan te geven, want ja het zelf wel een heel ander soort vragen zijn en als iedereen





bijvoorbeeld de zelfde error krijgt dan kan je daar ook nog wat mee. Maar is inderdaad wel fijner dan met je hand omhoog zitten denk ik.

57 Moderator: En stel dat mensen dit soort vragen mogen insturen, zou je van hen dan ook willen zien wat ze insturen? Of zou je het vervelend vinden als andere mensen jouw vraag kunnen zien?

58 Mia: In Principe niet, maar dat is omdat ik altijd lang wacht voordat ik een vraag stel. Ik vind het altijd een beetje stom voor iets kleins een vraag te stellen. Ik probeer altijd eerst een beetje zelf te doen en als ik er echt niet uit kom zou ik een vraag stellen. Dus ik zou het niet vervelend vinden als andere mensen mijn vraag zien. Ik zou het misschien ook wel fijn vinden om andere mensen hun vragen te zien omdat je dan misschien ook meer gaat nadenken van "Oh ja dat heb ik net ook gehad" en dan ja

59 Sarah: Dan kan je elkaars vragen misschien ook nog beantwoorden

60 Mia: Ja precies

61 Sarah: Ik zou daar inderdaad ook niet zoveel problemen mee hebben. Ik kan me wel voorstellen dat als je wat faalangst gevoeliger bent dat je dan meer...

62 Moderator: Ja, even kijken. Stel dat je een fysieke oplossing heb, dus iets zoals je op het bord schrijft of iets in je omgeving waarop je aan wil geven dat je aan de beurt wil zijn, waarop je kan zien dat jij geholpen wil worden. Zou je dat fijner vinden dan online?

63 Mia: Ik weet niet, ligt eraan hoe het er uiteindelijk uit komt. Want met het op het bord schrijven wat je zei dacht ik al "Heeft dat nou zoveel nut?" Behalve dat je niet meer met je hand omhoog zit. Als de student assistent de namen niet weet houdt het ook een beetje op. [lacht]

64 Moderator: Ik heb het wel gezien, dan roepen ze het om en dan moet je je hand omhoog steken.

65 Sarah: Ja precies

66 Mia: Oke



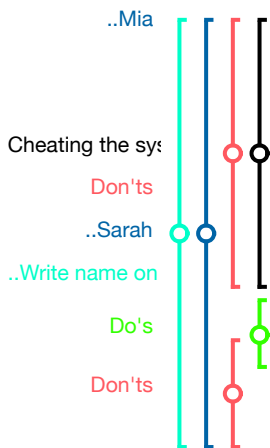
67

Sarah: Dat was ook wel met aftekenen erbij. Dan moeten in principe ook veel mensen aftekenen en als dan de hele zaal met zijn hand omhoog zit weten ze ook niet meer wie er aan de beurt was. Vandaar dat ze dan op het bord schrijven.



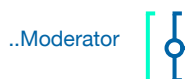
68

Mia: oja



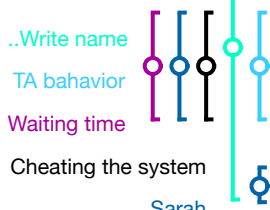
69

Sarah: Daar zit op zich wel een volgorde in. Maar dan krijg je wel dat mensen vast hun naam opschrijven van "Ja ik denk dat ik tegen die tijd wel klaar ben" inmiddels staan er al tien namen op het bord "Dus ik schrijf de mijne er ook maar onder" dan zijn ze daar bijna en dan vegen ze hun naam weer weg en zetten ze hem aan het einde van de nieuwe rij neer. Dan krijg je daar ook weer een soort van gekke chaos in. En doordat iedereen dat doet werkt het niet meer. Maar ja op zich iets fysieks vind ik opzicht geen probleem, behalve dat mensen er sneller misbruik van maken. Vooral omdat je dan niet specifiek hoeft aan te geven wat je probleem is.



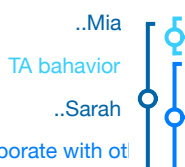
70

Moderator: Als je dat op het bord had, moest je dan als je een vraag had ook je naam op het bord of dan je hand opsteken.



71

Sarah: Officieel moest je dan je naam ook op het bord zetten, maar wat effectiever was om onderweg een student assistent te onderscheppen en dan je korte vraag te stellen.



72

Mia: [knikt instemmend]

73

Sarah: Want hij had ook wel door dat het anders te lang duurde. Vaak als er mensen om je heen al klaar waren met een opdracht en jij was daar nog mee bezig dan kon je om je heen ook wel om hulp vragen. Dat scheelde wel.



74

Moderator: Stel er is een systeem waarin je moet aangeven waar je in de opgaven bent zo je dat vervelend vinden, dat de docent dan kan in zien waar je bent?



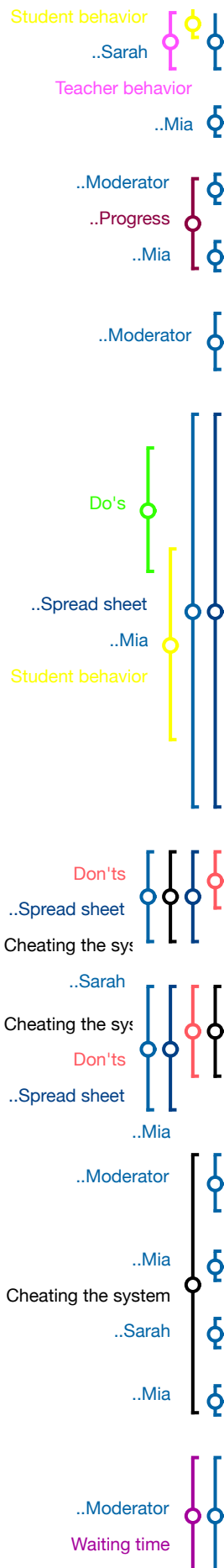
75

Mia: Weet niet



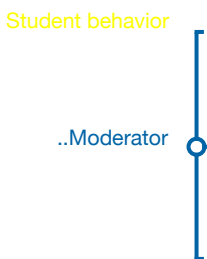
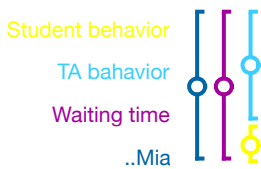
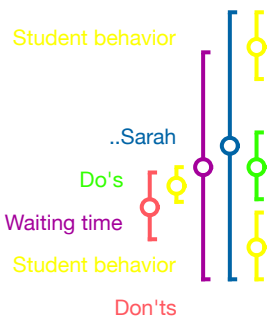
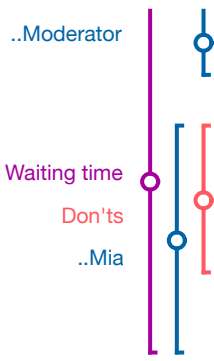
76

Sarah: Ik zou het persoonlijk niet een probleem vinden, want de docent heeft toch wel door waar je bent als je die een vraag stelt. En ja hoe ik mijn tijd indeel is aan mij en ik heb wel vaker in werkcollege drie en vier nog vragen gesteld over werkcollege 1, omdat ik dan zo iets had van ja nu heb ik er gewoon tijd voor en als ik hier nog een vraag over heb wil ik gewoon dat het



duidelijk is. En meeste docenten hebben ook zoiets van “Als je het op het einde maar af hebt is het ook oké.”

- 77 Mia: Je moet het gewoon vragen
- 78 Moderator: Jij had er ook geen problemen mee? [Kijkt naar Mia]
- 79 Mia: nee
- 80 Moderator: Nog andere dingen die je wel eens mee hebt gemaakt in werkcolleges?
- 81 Mia: Nou wat ik nu wel heb is dat we nu een project hebben waar ook een werkcollege bij zit en er wordt gewoon een google spread sheet gebruikt om je in te delen bij docenten en een student assistent die je in dat kwartier kan helpen en dat vind ik eigenlijk fijn. Want dan kan je zelf aan het begin van het college denken van “rond die tijd zal ik hulp nodig hebben dus dan kan ik al mijn vragen stellen” Vooral omdat het een project is waarmee je verder kan zonder dat je vragen beantwoord zijn en dan weet je in dat kwartier heb ik de tijd om al mijn vragen te stellen. Het werkt best wel goed vind ik. Maar als je een programmeer college hebt waar je zeg maar stuk loopt als je iets niet weet, dan werkt dat dus ook niet echt.
- 82 Sarah: Heb je dan ook niet dat mensen er zeg maar misbruik van maken dat ze zich inschrijven in een kwartier en vervolgens geen vragen hebben en denken “Oja laat maar.”
- 83 Mia: Ja. En wat je ook wel merkt [lacht] is dat mensen hun eigen ding in gaan vullen op een tijdslot waar al andere mensen staat. Dus dat is echt heel frustrerend, maar in principe, de essentie van dat ding is best wel fijn.
- 84 Moderator: Oja want dat natuurlijk ze kunnen die tijdslots afpakken.
- 85 Mia: Ja
- 86 Sarah: Je bent dan ook echt een suf persoon
- 87 Mia: Ja een heel erg irritant persoon als je dat doet
- 88 Moderator: Stel je hebt een systeem waarin je kan aangeven dat je een vraag hebt of dat je wil aftekenen, zou je het dan vervelend vinden als dus bijvoorbeeld iemand anders dan



ondanks dat jij eerder was voor jou geholpen wordt omdat die een ander type vraag heeft?

89 Mia: [kijkt bedenkelijk] Ik zou het wel heel vervelend vinden als ik het eerder aan had gegeven en diegene heeft dan volgens zichzelf een korte vraag en blijkt dan tien minuten bezig te zijn en dat ik dan denk ja ik was in twee minuten klaar geweest.

Omdat je dan alsnog tien minuten aan het wachten bent terwijl jij maar een vraag had van twee minuten.

90 Sarah: Soms is het inderdaad ook wel van oke, als je na dat je je vraag hebt gesteld of door kunt of weg kan, dan zit er voor je zelf ook druk achter. "help me nou even want dan kan ik weg" of dan kan ik door.

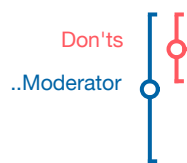
91 Moderator: Oh dus als het je laatste vraag is.

92 Sarah: Ja want dan kan ik mijn tijd nuttiger besteden, voor je gevoel in ieder geval. Het hangt inderdaad van de duur van je vraag af. Want als een student assistent naar jou toe loopt en ondertussen wordt die onderschept en het is een vraag van een halve minuut dan is het "Oja prima leef je uit" maar als het dan vervolgens heel lang duurt dan is het "O nou oké waarom steek ik überhaupt nog mijn hand op"

93 Mia: Ja die student assistent zal toch iedereen willen helpen, die zeggen dan ook niet "O dit duurt langer dan tien minuten dus ik ga eerst weer diegene helpen" Dan gaan ze gewoon door en dan ben jij van "Meh maar hierna kan ik gewoon weg"

94 Moderator: Dus dat is zeker iets wat wel meespeelt in of je dan sneller geholpen wil worden of niet. Even kijken. Dit zijn denk ik de vragen die ik nog had. Zijn er nog dingen die je zijn opgevallen in werkcolleges waarvan je denkt "die zijn echt top, hier deden ze dat goed en zo zou het voor mij altijd wel mogen"?

95 Sarah: Ik denk dat voor mij voor een groot gedeelte bepaald of je een werkcollege als nuttig ziet of niet is het aantal student assistenten, want bij bijvoorbeeld \_\_\_ waar we geen programmeren hadden maar wel werkcolleges en die werden door alleen de docent begeleid en dan is het "Leuk dat ik nu een vraag heb, maar er zijn nog vijftien anderen met vragen" en voordat die docent dan bij al die vijftien vragen is geweest duurt het nog heel lang. De manier van vraag stellen maakt wel uit maar ook de capaciteit om de vragen te helpen.\



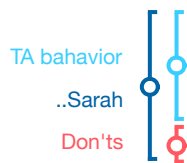
96

Moderator: Dat was dus voor jou, als er dus te weinig student assistenten zijn dat was wel vervelend voor jou. Heb jij [wijst naar Mia] nog dingen waarvan je dacht “oh dat was heel goed” of “daar hadden we het zo geregeld”?



97

Mia: Niet zo dat ik het me kan herinneren het is voor mij ook wel een tijdje geleden. Maar dat er genoeg student assistenten waren, maar ook ja capabel zijn, sommige mensen zijn altijd heel uitgebreid en sommige zijn meer to-the-point als er veel vragen zijn. Dat ligt ook wel een beetje aan de student assistent zelf of het goed gaat of niet denk ik



98

Sarah: Het ligt ook aan hoeveel ze je willen vertellen. Sommige student assistenten helpen je heel goed en sommige zeggen alleen “Ja denk hier eens over na” en dan lopen ze weer weg. En dan denk ik “Oke” [Lacht]



99

Mia: “Je hebt nog steeds de vraag niet beantwoord gekregen”



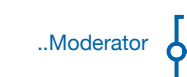
100

Moderator: Ja. Ik denk dat ik hierbij voldoende informatie heb gekregen. Komt het officiële nog dat ik jullie er aan moet herinneren dat je niet van elkaar informatie mag delen buiten deze kamer. Het is natuurlijk anoniem en mensen hebben er voor gekozen om het hier te delen, maar het kan ook best zijn dat ze niet willen dat je het voor hen buiten deze zaal deelt.



101

Mia: Ik zal het niet doen hoor Sarah [glimlacht]



102

Moderator: Heel belangrijk. En hebben jullie nog vragen voor mij?



103

Sarah: Wat is nu al je idee.



104

Moderator: [stopt de video opname en legt idee uit]

## Appendix Q

# Observations

## Q.1 Observation 1

Information about the room: Carré 2N, a small room, with little space to walk around. Not all seats are occupied by students. This is the last hour of a four hour tutorial session. In the room are 42 students, a teacher and a TA. The tutorial session was mandatory, the students had to sign off the assignments within the session. This session is the first tutorial where these students and the support work with the white board to sign in to the queue. There are two whiteboards in the room. On the right whiteboard there are several student names and the announcement that this board should not be used anymore. On the left board there are three columns drawn by hand, the left column is full with names, the middle column is starting to fill up and the right column is empty. The students place their name at the bottom of the list in the middle column when they are ready to sign off the assignments.

15:45 TA\_1 calls name from the board and the student raises her hand, the TA walks toward the student and helps. Extra TA\_2 walks in and looks at the board. Three students are done for the day and have signed off their assignments, they pack their belongings and chat with other students about how far they are in the assignment set. TA\_2 crosses a name from the list, points at the next name and looks at the room.

15:50 There are two names left on the right board, the teacher handles the names on this board.

15:53 Students from the front row collaborate with students from the middle row to solve assignment 1.7. In the back row students discuss several assignments with each other.

15:56 The right white board is finished.

16:02 TA\_1 calls a name, but it is the student that TA\_2 is helping, so TA\_1 crosses off that name and the next and calls the name.

16:05 Students put their name in a random shape in the middle column. Two students decide that they are allowed to put their names above others.

16:07 TA\_2 is done and calls a new student. Students who haven't been checked stay put and start doing something for themselves.

16:10 A student raises his hand.

16:11 The student lowers his hand, no help has come

16:12 The teacher crosses off a student from the left board and goes to the next student.

16:14 Students who collaborate, talk softly and the ambiance is nice.

16:15 TA\_2 is done and walks to the next student. On the front row there are students who need a power outlet, but no outlet is available.

16:18 Two students write their names on the board. The teacher is done helping walks to the board and calls a name, but TA\_2 forgot to cross off the name again. The teacher crosses off the name and calls the next name. At this point the board contains 21 names.

16:21 One student looks bored and sits with her arms crossed. TA\_1 is done and goes to the next two students on the board. The two students share 1 laptop.

16:23 One student is already done and checked off, but waits till the student next to him is done as well.

16:26 Several students look bored. One student is holding his head with his hands. Several students are looking at their phones.

16:27 The student who was bored at 16:21 looks around her to see where the TAs are.

16:28 The student from 16:26 is sitting up straight again, but is still looking bored at his phone.



16:29 Another student starts looking at her phone

16:30 29 of the 42 students are still present

16:32 TA\_2 is done and goes to the next student

16:33 The teacher is done, walks to the board and doesn't see the system because of the random placement of names of the students. He asks the students in the front if they know who is next and chooses the next two students from the board.

16:34 The student that was waiting at 16:23 leaves with the other student who is now done.

16:35 Three students are looking at their phones

16:36 The teacher took a short break to drink some water and goes to the two students who he has crossed off at 16:33

16:37 One student puts two new names on the board

16:38 TA\_1 is done and goes to two new students

16:39 Three students on the back row discuss if they should write their names on the board already for the final sign off, they are not done yet.

16:40 TA\_2 is done and like the teacher doesn't get the system anymore and asks the students who is next. The next student is the student who has been bored since 16:21

16:43 A student writes his name on the board. There are now 15 names on the board.

16:45 The students from the back row from 16:39 decided to put their names on the board before they are done. One of them writes three names on the board.

16:46 TA\_2 is done and asks students who is next and goes to that student

16:48 The student from 16:21 is done she packs her stuff and goes home

16:52 The teacher is done and goes to the next two students

16:54 TA\_1 is done goes to the board, and calls the next name. The student was the student from 16:26 who left the room. Because TA\_1 had crossed off the name he writes it down again and goes to the next student.

16:58 The teacher is done and goes to the next student

16:59 The student who wasn't there at 16:54 is back

17:01 Four students have defined themselves as a set by putting their names in curly brackets and putting the mathematical notation for a set next to it

17:02 A student adds her name to the list.

17:09 The students who defined themselves as a set are sitting in the front row talking softly to each other.

17:10 The teacher is done and goes to the back row

17:12 TA\_1 is done and goes to two new students

17:15 The teacher is done and crosses off the names of the two students that TA\_1 is helping. He then goes to the set of four students on the front row.

17:18 Two students are looking at their phone

17:19 One of the students puts her phone away and start reading the manual. Another student starts looking at his phone.

17:20 TA\_2 is done and goes to the next student

17:22 Two students in the back talk enthusiastically about a game. Two students are looking at their phone

17:23 The teacher is done, and explains something to the students he had just helped.

17:24 The teacher goes to the next student

17:25 The four students stay in the room to talk, they are very loud

17:26 Once the four students had packed their bags they walk towards the door but on their way adre other students. They give two other students the tip to sign off as a group, because it takes less time, and draw a block around the two students their names

17:27 Three students are waiting for their sign off, and four students are working on the assignments

17:28 The teacher is done, he decides to help one student from the board, but by doing this he skips two students who are mad that they were skipped

17:29 The teacher is done and goes to the two students he just skipped.

17:30 TA\_1 is done, there are no names left on the board, he starts to clean the board.

17:34 One student is waiting on the two students who are helped by the teacher and one student is being helped by TA\_2

17:37 The teacher is done, he and TA\_1 discuss how it went.

17:39 TA\_2 is done and all the students have left the room

In this session 57 names were put on the board and there were 42 students. This means that 15 students have signed off their assignments in two sign offs. The teacher told that he wanted each student to sign off after three to four assignments. The room was too small for the support to sit next to the students when they helped, so they had to lean on the table behind them or squad to be on the same height as the students. Students didn't use the sign off system properly, some students cut the line, other students wrote their name on the board before they were done, and names were not written below each other but in a garland. The average time the teacher needed to help was 10 minutes and the TAs had an average time of 18 minutes.

## **Q.2 Observation 2**

Information about the room: Oost Horst 111, a large room, with 5 rows of seats, and several beamers. This observation was done in the first two hours of the tutorial session of four hours. The tutorial was not mandatory. Students were allowed to work on assignments from the manual or on their personal project. At the beginning of the tutorial there were 25 students, 4 TAs and 1 teacher. Defining front, middle and back: the front of the room were the first two rows, the middle of the room were rows three and four and the back of the room was the last row.

08:45 The teacher gives an introduction for the tutorial, the students listen

09:10 Four students raise their hand and get immediate attention from TAs

09:15 One student on the first row raises his hand at 09:16 he lowers his hand

09:16 Another student raises his hand, one TA who is busy sees it and directs a different TA toward the student

09:22 One student raises her hand, but the TA didn't see it because he was talking to me

09:29 One student walks in the room and takes place in the back of the classroom. At this point there are 28 students in the room and 5 support.

09:30 Walk around to see how many students are not working on their assignments or project: four students were not working. Some of them were distracted by what another student's screen and one was only shortly distracted and is now reading the book of the course.

09:31 Another student walks in the room and sits at row 4. #29 students #5 support.

09:33 Collaboration is done quietly and the ambiance is nice

09:39 A student asks a detail question: "I want my fish to ..."

09:44 One student from row 2 leaves

09:46 One student from row 5 leaves

09:47 One TA has been working on his own laptop for a while. Before he sat down he actively walked around to see if students had questions

09:49 One student leaves the room. #26 students and #5 support.

09:50 The teacher goes to the student who was reading the book and asks if she wants to show what she has made so far. The teacher helps the student with the error she gets.

09:51 Three TAs are inactive, one of them is actively walking around

09:52 Another teacher enters the room, discusses with the TAs how the tutorial went so far. The TAs mention that it is less busy than last week.

09:54 Three students are distracted and have a loud conversation about a different topic. One student watches his phone.

09:56 All the TAs are inactive. One student raises her hand, two of the TAs decide who of them will help

09:57 A student enters the room and takes a seat in the fifth row #27 students #6 support

10:00 An extra TA enters the room there are now five TAs and two teachers to support the students

10:01 Two students take a coffee break

10:02 The second teacher is approached by the first teacher if she has the time to help the girl in the back with the error. This is the same girl who was reading

10:03 Five TAs are inactive. One of them is actively watching for raised hands.

10:04 Walk around to see how many students are not working: four students are not working. One student appeared not to be working because he was searching for sponge bob images, but his project contains sponge bob, so he was working.

10:06 Two students get back from their coffee break

10:11 One TA walks actively around and looks at the screen of a student in the middle of the room and asks a question about what the student is doing. At the next student he makes a remark about something and asks if the student needs help with that.

10:12 Three students on the front of the room are chatting

10:13 Two students in the middle of the room collaborate

10:14 The three students from 10:12 stopped chatting and are now helping each other understand the principals

10:15 A TA helps a student

10:16 Two students take a coffee break

10:19 The two students come back from their break and another student enters the room and takes a seat at row four

10:20 A student from the second row moves to the middle of the room to collaborate with a friend

10:21 A student has a question

10:24 A student raises his hand

10:25 One student has a question, raises her hand but gets no response, has to wave at the TA that is working on his laptop to get attention

10:26 One student enters the room and takes a seat at the second row

10:30 The room is noisy and the student of the second row moves to the fourth row. By now there are #30 students and #6 support.

10:30 Two students pick up their laptop and walk from row 4 to the front to ask the TA a question

10:31 Three students in the back are busy doing other stuff

10:32 Another student enters the room and sits in the back

10:32 Walk around to see how many students are not working: 8 students are not working

10:37 One of the students who walked to the front earlier picks up his laptop and goes to the TA for help

10:38 A student raises her hand, but all the support is busy. The first TA who was done sits in the front and gets back to his own laptop when he was done helping the student from row 4. After 70 seconds the student gets help.

10:50 One of the TAs walks around and asks questions and gets questions from the students

10:51 A student enters the room and takes a seat at row 5. There are #32 students and #6 support in the room

10:56 The students are noisy

11:00 Walk around to see who is not working: Nine students are not working on their assignments or project.

At 11:00 there were 10 students seated in the front, 15 in the middle and 7 in the back. In total there were 5 TAs and 2 teachers available to help the students, this means that their supporting staff per five students. There were a total of 35 raised hands of which 33 got attention. Almost all the questions had a response time within half a minute.

As you can see in the table below the students in the front asked more questions than the students behind them. On average the students in the front asked 1.7 questions per person, in the middle 0.66 and in the back 0.86 questions per person.

	First rows	Middel rows	Back rows	
response in:				
0-10 sec	12	6	6	
10-30 sec	4	3		
30-55 sec		1		
55-85 sec	1			
Total # questions	17	10	6	33
Lowered their hand	2			

## **Q.3 Observation 3**

Information about the room: The SmartXp is a room in the zilverling it is a large rectangular room, the front of the room has a large beamer and several seats. The students face the beamer in rows, every four tables have their own power strip. In the back of the room the tables face each other. In the middle of the room there is a path between the tables and on one side of the room there is a hallway. The observed tutorial was a lab session of a master course, the students could attend this or the other session and were obligated to hand in their work at the end of the day. In total there were 120 students, 4 TAs and 2 teachers present.

14:10 Two students raise their hand, one in the middle of the room and one in the back.

14:12 A TA goes to the hand in the middle, the student in the back lowers his hand. Another TA is done and looks into the room.

14:14 Students work in pairs and collaborate

14:16 A student raises her hand in the middle and gets response within ten seconds

14:17 Noise level decreases. TAs bring take their laptop with them if they help students. One TA mentions that it is less busy than the last lab session

14:19 A student raises his hand and gets immediate attention.

14:22 A student enters the room and takes a seat next to his partner in the front of the room

14:24 The noise level increases, the teacher tells me that for the morning session there is a different group of TAs and that the group of students is split into two groups of roughly 100 students

14:31 TA asks the teacher for help

One raised hand in the front gets help within 10 seconds

Two raised hands in the middle get help within 30 seconds

One hand in the back, lowers his hand after 2 minutes

14:33 A student raises his hand and lowers it after 20 seconds

14:35 A student in the middle raises his hand and lowers it after 1 minute

14:36 Another student raises his hand, but the TAs and teachers are still busy with the students from 14:31

14:37 Including the hand from 14:36 there are now 3 raised hands. One of these hands is lowered after 10 seconds.

14:38 One TA is done and helps the student that had raised his hand at 14:37. But the student who had his hand raised since 14:36 is still with his hand up

14:39 The student gives up and lowers his hand.

14:40 The teacher is done with helping, walks to the front and gets back to his laptop. Meanwhile a student raises his hand, the teacher sees this and doesn't respond.

14:41 A student raises her hand

14:42 A TA is done and helps the student that raised his hand at 14:40

Two students take a coffee break

Another TA is done and goes to the student that raised her hand at 14:41

14:43 Two students pick up their laptop and go to the teacher in the front of the room

14:45 One TA is done, walks actively around and gets a question from a student



- 15:00 Observation intermitted for an interview with a teacher
- 16:08 Observation resumed.  
Two TAs are done with helping and walk to the front of the room  
A student raises his hand and gets attention within 20 seconds  
Another hand is raised, one TA asks another to help, but that TA was gathering more information on his own laptop to help students who had a question. The student gets help within 30 seconds
- 16:17 Three students are done
- 16:21 One student is done and leaves the room  
A student raises his hand and gets response within 10 seconds
- 16:22 Another student raises his hand, 30 seconds response time
- 16:31 In the back of the room a student raises her hand and gets respons within 20 seconds
- 16:33 One hand in the front, 20 seconds response time
- 16:35 One hand in the middle, 35 seconds response time
- 16:36 A students walks to the front of the room to ask the teacher a question
- 16:41 One hand, 10 seconds response time
- 16:43 One hand that the student lowers after 7 seconds. Another hand, with 15 seconds response time
- 16:46 A student is done and leaves
- 16:48 One hand raised in the front less then ten seconds response time
- 16:54 2 hands who are both attended within 10 seconds
- 16:56 In the back a student raises his hand, more than 35 seconds response time
- 16:59 A hand in the front of the room is helped within 10 seconds.

In the two hours that were reviewed from this lab-session there were 30 raised hands, of which 6 put their hand down again. Of the six students who lowered their hand one did this within 7 seconds from raising, the rest waited for more than a minute before they gave up, one of those waited for 3 minutes with his hand raised. On average the students had to wait for 40 seconds before they were helped. Per 16 students there was one supporting staf.



## Use scenarios

### R.1 Creating a course

#### R.1.1 Version 1.0

In the previous version of TA-help.me the teacher only had to set up the course, by giving the course a name, state in which room the tutorial would take place, and what lists should be shown. The teacher could add TAs to the course and give them rights to adjust the course and lists. See figure R.1

The screenshot shows the TA-help.me website interface. At the top, there is a navigation bar with the logo 'Ta-Help.me', a search bar with 'CODE' and a 'Go' button, and a user profile 'Course - Heleen Kok'. Below the navigation bar, there is an 'Overview' section for 'Test course Heleen' with 'Create Room' and 'Open' buttons. A message states: 'There are no rooms in this course yet, do you want to create a room?'. The main content area is divided into two sections: 'Create Room' and 'Create Course'. The 'Create Room' section includes a 'Room name' input field, a 'Course' dropdown menu (currently set to 'Not part of a course'), a 'Lists' section with 'Questions' and 'Signoff' items (each with a red 'x' button), an 'Add List' section with a 'List Name' input field and a green '+' button, and an 'Admin code (optional)' section with a text input field and a blue 'i' icon. A note below the 'Create Room' section reads: 'Note: Rooms automatically close after 2 hours of inactivity.' and a 'Create Room' button. The 'Create Course' section includes a 'Course name' input field and a 'Create Course' button. At the bottom of the page, there is a small copyright notice: '© Ta-Help.me - Created by Aron van Harten'.

Figure R.1: TA-help.me site version 1.0 creating a room for a tutorial session

## R.1.2 Version 2.0

In the new version the creation of a course takes a bit more time. The new course creation has the same functionality as the previous version, but the list can be expanded by giving them subcategories (see figure R.2. The teacher also has the option oblige the students to give a written entry when they want to be put into a list. When the teacher chooses to make a list with subcategories the tab-pane will expand with that list name, in the tab of the list the subcategories can be defined (see figure R.3. The subcategories can have their own subcategories. For instance week 1 can have the subcategory assignment 1, assignment 2, ..., assignment n. And these assignments can have subcategories like classes, objects, and other assignment specific categories.

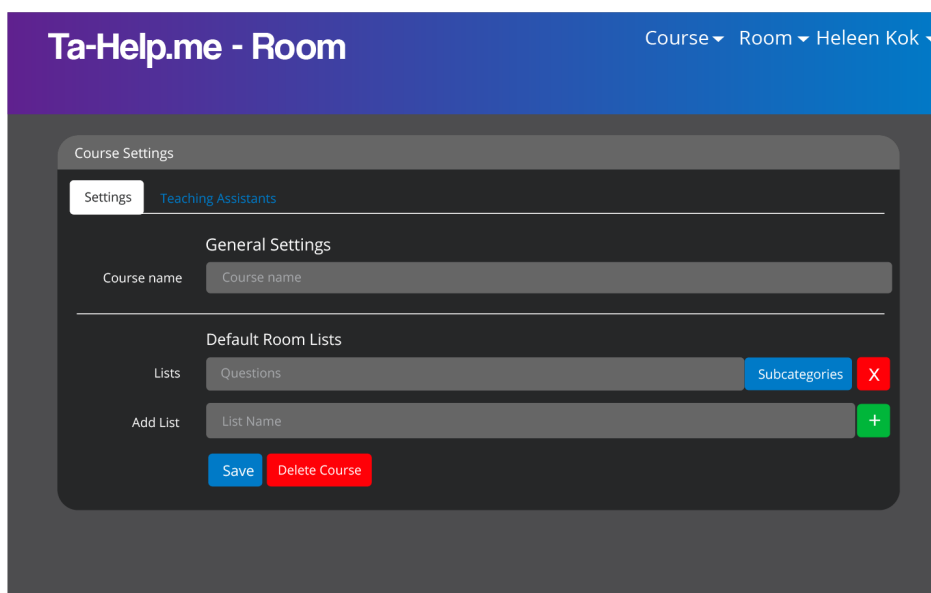


Figure R.2: TA-help.me site version 2.0 course settings screen

## R.2 Asking questions and signing off

### R.2.1 Version 1.0

The students could fill in the room name, and add themselves to a list. In figure R.4 there are two lists visible, Questions and Sign off. When a student wants to add themselves to a list they click the blue button and the name they provided will be added to the list. The TA can choose to help or remove a student from

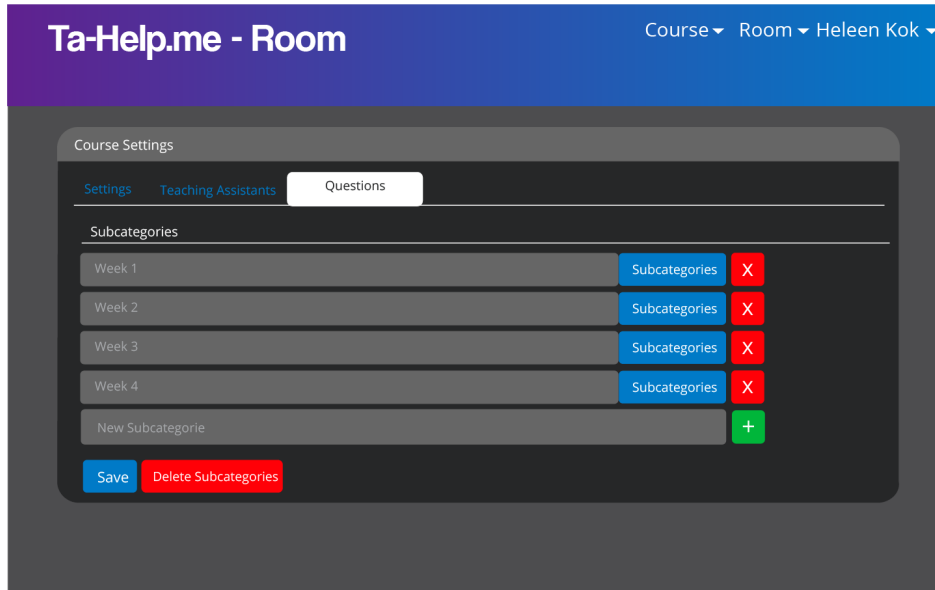


Figure R.3: TA-help.me site version 2.0 subcategory tab of a questions list

a list (see figure R.5). When a student is chosen by the TA they get a message to raise their hand, so the TA can find them (see figure R.6).

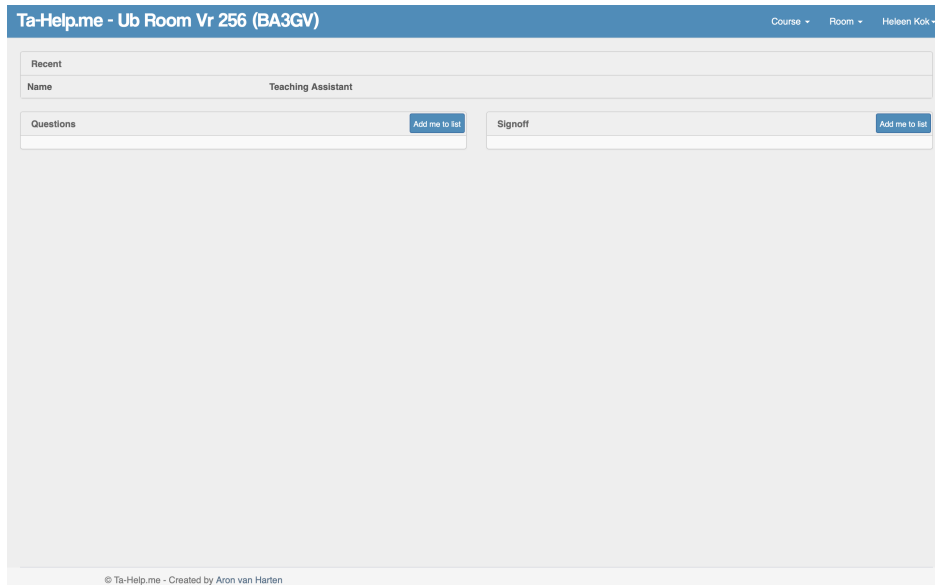


Figure R.4: TA-help.me site version 1.0 Lists view students

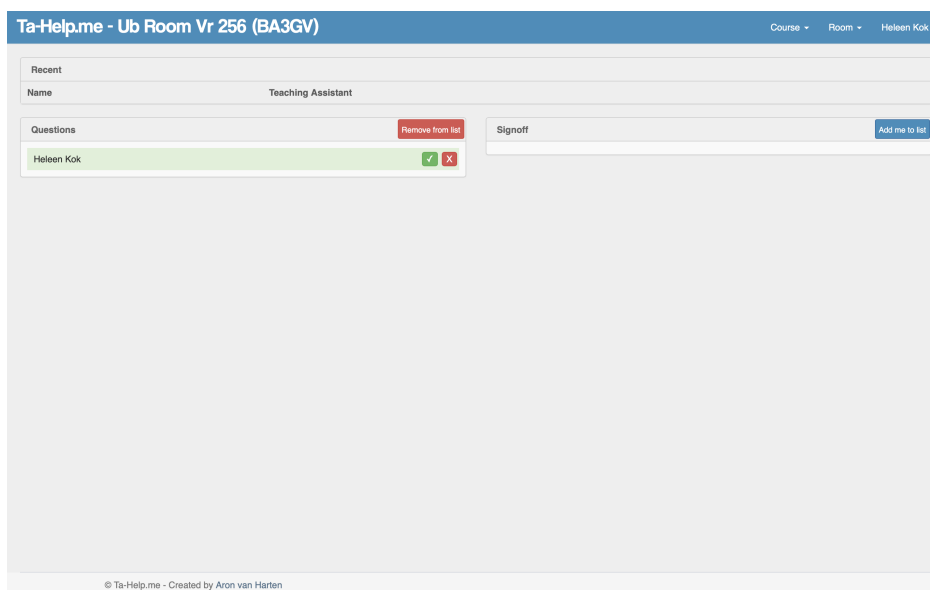


Figure R.5: TA-help.me site version 1.0 Lists view TA

## R.2.2 Version 2.0

### Students

The main difference between version 1.0 and 2.0 is the way questions are dealt with. In the first version students could add themselves to a list. In the second version the students need to go through a view steps before adding themselves to a list. The first step is click on the question button (see figure R.7). They then need to choose a category that applies to their question (see figure R.8), after choosing the category the student is allowed to write out their question, to choose from the questions that are already asked, or to select a subcategory to filter the show questions (see figure R.9).

### TAs

When a student has written their question or chosen a previously asked question, the student will be added to the list and the TA can choose to help them. Behind the names of the students the tags of the chosen categories will be shown, this helps the TA see in which category the student has a question (see figure R.10). If a TA chooses to help a student that has the same question as another student in the list the TA gets a pop-up asking if the want to help all the students by bringing them to the front of the room and tackling the question together. For instance a TA helps Aron, then he can also help Kees by helping them together. In the top of figure R.10 the recently helped students

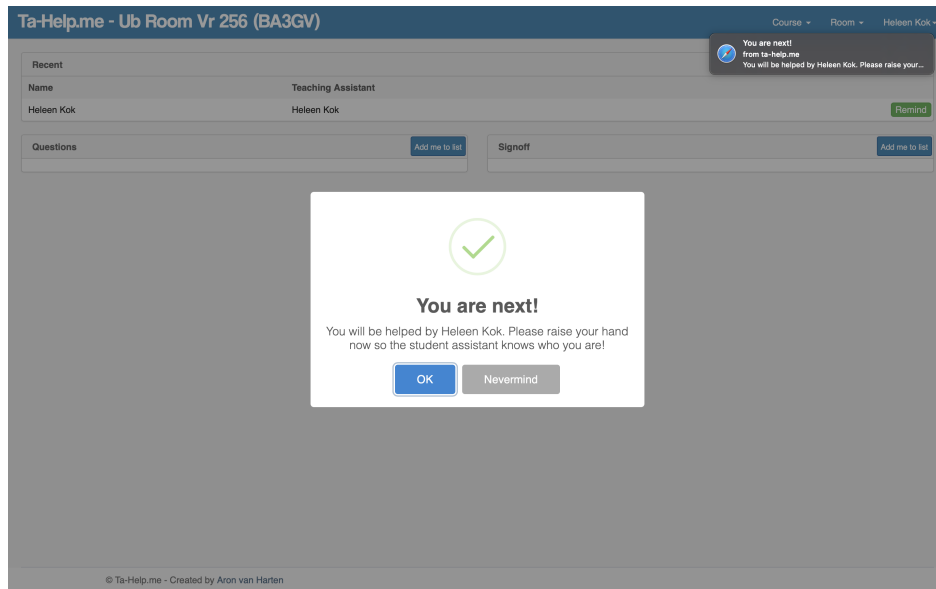


Figure R.6: TA-help.me site version 1.0 pop-up that it is the students turn

are shown, the TA can choose here to alter or delete the question the student has asked.

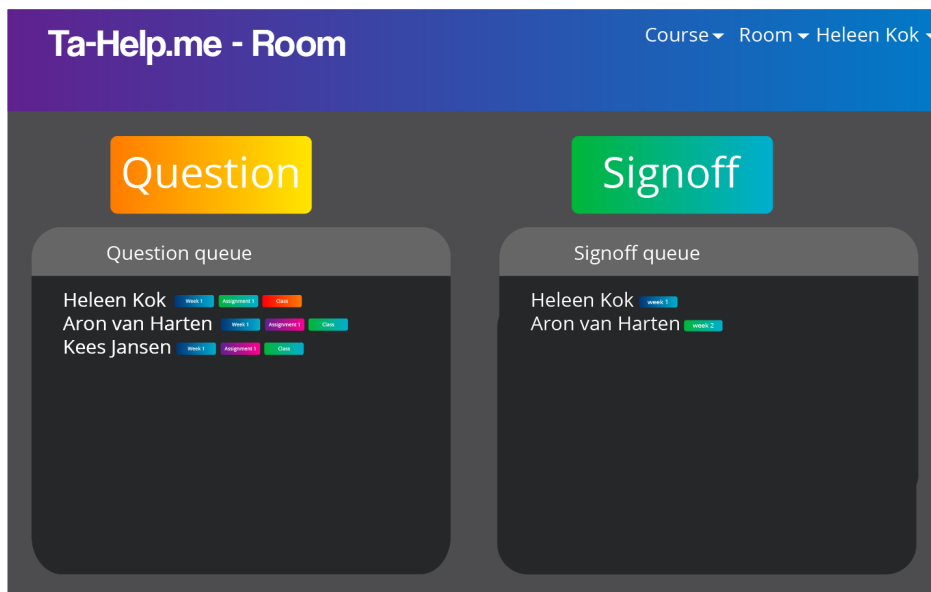


Figure R.7: TA-help.me site version 2.0 Home page

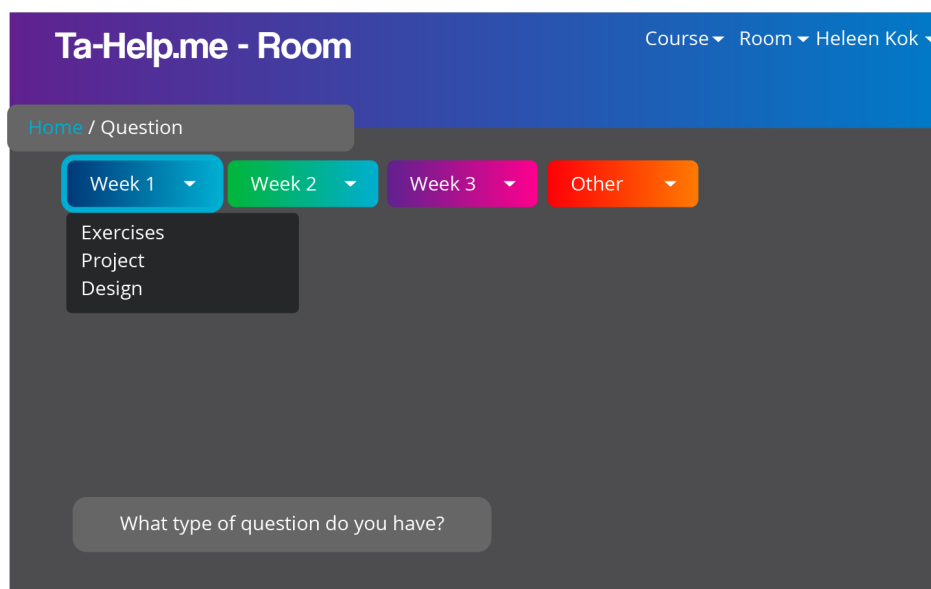


Figure R.8: TA-help.me site version 2.0 Category page



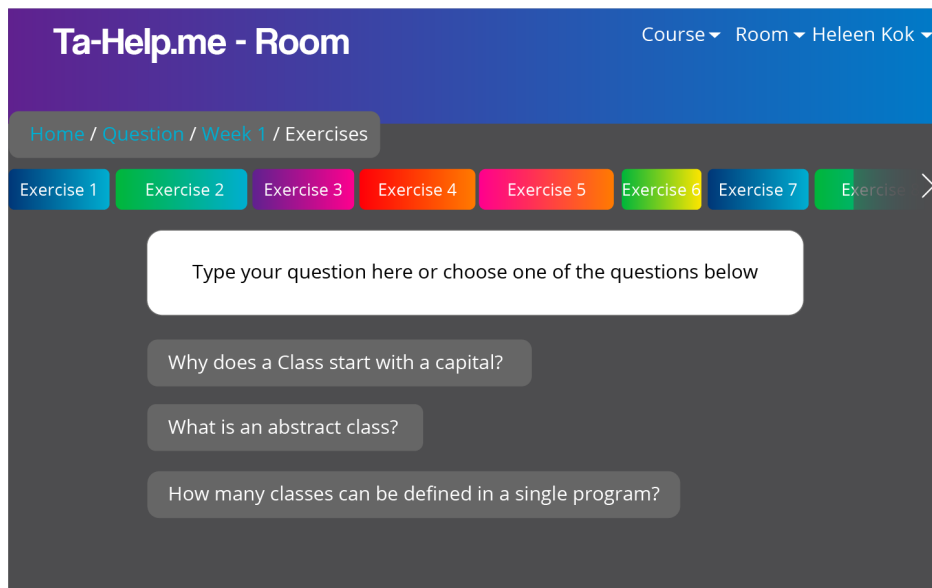


Figure R.9: TA-help.me site version 2.0 Question page

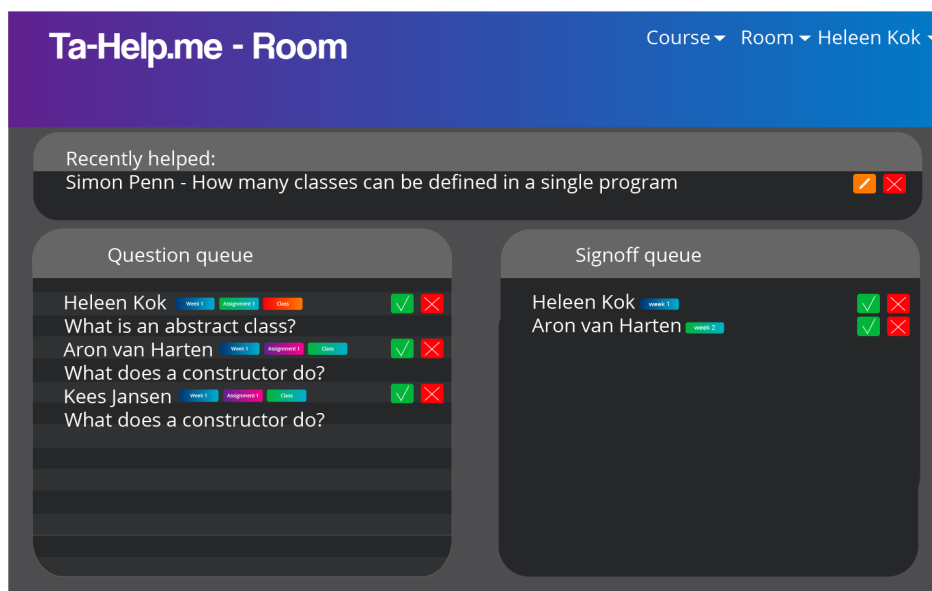


Figure R.10: TA-help.me site version 2.0 Lists page TA view



# Moderator guide TA-help.me TAs

## S.1 Introduction

Welcome, thank you for coming. I appreciate you taking the time to assist me in this research. There is coffee, tea and stroopwafels on the table, feel free to help yourself during the interview. The bathroom is just around the corner, and you are allowed to leave the room at any time.

### S.1.1 Introducing the moderator

My name is Heleen Kok and I will be leading the discussion today. I am a master student of ECBB that is the educational track, and I am working on my master thesis about improving programming tutorials. I have worked with Aron to improve TA-help.me, and this week I am collecting data about the new version of the website.

### S.1.2 Recording specifications

The interview will be video recorded, this to help me transcribe the interview afterward. I will be the only one to see the video, and after the transcription the recording will be deleted. During the transcribing your names will be replaced in order to keep the transcription anonymous.

### S.1.3 Contribution expectations

This interview is not a test, there are no wrong answers. I am very interested about what you think and feel. It is okay to disagree with each other, I am

interested in your opinion, even when it is already mentioned. The purpose of this focus groups is to determine your ideas and opinions to be able to pinpoint how tutorials can be improved. You do not have to spare my feelings, all feedback is welcome.

## **S.2 Guidelines**

“There are a few guidelines I would like to ask you to follow during the focus group interview. First, you do not need to speak in any particular order. When you have something to say, please do so. Second, please do not speak while someone else is talking. Sometimes, the exchanges get emotional, and it is tempting to jump in when someone is talking, but we ask you to refrain from doing so. Third, remember that there are many people in the group and that it is important that we obtain the point of view of each one of you. Fourth, you do not need to agree with what everyone or anyone in the group says, but you do need to state your point of view without making any negative comments or put downs. Finally, because we have limited time together, I may need to stop you and to redirect our discussion. What questions do you have? Okay, let’s begin.” [48].

## **S.3 Introduction round**

Let’s begin with an introduction round. I would like you to introduce yourself and briefly tell us how long you have been a student assistant and what courses you have assisted. Let’s start with...

## S.4 Discussion

Topics to discuss:

- 1 What methods did you use before TA help me
- 2 What did you like and dislike about the previous version?
- 3 You have all used the new version:
  - i. What were your first thoughts?
  - ii. What features did you like?
  - iii. What features did you dislike?
  - iv. What features should be added
  - v. Where were there frustrations on your side using the new version?
  - vi. Did you encounter frustrations from the students?
- 4 Are there frustrations that you encounter when assisting a tutorial?
- 5 Should students be able to see each other's questions?
- 6 Should students be able to edit questions? Their own, or the question of someone else?
- 7 How did you choose who to help?
- 8 Did you help several students at the same time by calling them to the front?
  - i. What was your experience with this feature?
  - ii. How did the students react?
- 9 What features should the sign off list have?
  - i. Should students be able to sign off multiple weeks at once?
    - A. Forcing students to sign off in several steps is better.
  - ii. What if you want to prioritize one week above another how would you like the system to deal with students that have checked several weeks for sign off?
- 10 How specific should the categories be?
- 11 Who should be responsible for checking if the questions are good?
- 12 Who should be responsible for the category list?
- 13 Would you like to know how long a student has been waiting for help

## **S.5 Wrap up**

We are close to being out of time. I will attempt to summarize the ideas that were discussed. ... Do you agree with this summary? Are there ideas that you would like to add to the summary? It was unfortunate that we did not have enough time to discuss ... today.

### **S.5.1 Summary of the key ideas**

I will name key ideas that were discussed and would like to know from each member how they feel about this topic in a general way. I do not want to start the discussion again, just a general feeling about the topic. ...

### **S.5.2 Anonymity**

I would like to remind you that your input of today will be handled anonymously and then deleted. We ask you that you respect the right to be anonymous of each of the group members, and to abstain from discussing comments of group members.

### **S.5.3 Final questions and thanks**

Do you have questions for me? Thank you very much for your contribution and your time, I appreciate your involvement.

## Appendix T

# **Focus group interview after testing with TAs 1**

Steven: my name is \_\_\_ and this is my fourth year as a Teaching Assistant (TA). I have been a TA since my second year in several modules. I believe this is my 17<sup>th</sup> module. So I think I am allowed to say that I have some experience. One of the teachers called me a veteran TA.

Peter: My name is \_\_\_, I am a fifth year computer science student, currently in my master. This is my 7<sup>th</sup> module as a TA. Last year I did a whole year of assisting.

Nick: I am \_\_\_, this is my third year as an official TA. But I have been around a bit longer and I have been involved with tutorials on the side. And I have experienced enough, so that should help as well.

Moderator: Ok. Than we'll get on to the first subject that we will discuss, which is: What methods did you use before TA-help.me? What did you do when you wanted to handle questions and did you have a sign off system?

Nick: Yeah I remember those days!

Steven: I don't know what they used before this but we started using the whiteboard. On the whiteboard there were lists. Especially in the crowded modules, there were lists on the board and you wrote in a big letters on the board Questions and Signoff and students could come to the front of the room and write down their name. The TA would wipe out the name of the student whose turn it was and would shout the name through the classroom in the hope of a reaction of the right student and when they reacted that would be the student who you would help. That was roughly how that went.

Peter: [nods yes]

Nick: That was exactly the way it went. I had to do that as well.

Steven: [laughs]

Nick: [laughs]

Nick: It was a fine system, but it was really bare bones. Yeah

Steven: yeah

Moderator: Yeah

Steven: Well I think, the biggest problem with this system was when the study grew. There were too many students which gave two problems: we used to sit in really large classrooms, and it didn't matter how hard you shouted the name, if there was a little bit of background noise the students would not react to their name. And another problem were the names, I am really bad with names, but some of the foreign students had names that were unpronounceable for me. I can't blame them if they don't react to the wrong name.

Peter: [laughs]



Peter: We have also tried using group numbers, but this was only a short period.

Steven: Yes, we have used the solution to shout group numbers instead of names, but it had the same effect, people don't react that well to group numbers. They had to remember their number and had to actively listen to the numbers that were shouted. It is different than a name.

Peter: But those were hard to pronounce.

Moderator: Oke, and if we look at the previous version of TA-help.me, what were the features that you liked and disliked?

Peter: Let's see. First, we had the really simple version of the site. But the previous version had the dynamic lists that you could adapt, I liked that a lot. For instance, your giving programming, but there are hardly any questions than you could allow the students in your room to ask questions about design. By making a list.

Nick: [nods yes] That you as a TA had control of what would happen in this session. You can always announce in the room itself what the procedure of this day would be. But it is nice to have the ability to adapt your room. What I also liked when you had setup your room, it was only one click for the student to be added to a list. Now they have more clicks to get there

Peter: Yeah

Moderator: Yeah

Nick: with a good reason, but it was easy with the old interface, you were literally one click removed from asking a question.

Steven: [nods yes] It was a low threshold application to use. Now it is a little bit harder, but I have noticed in the last session that students don't really mind. I have had no complaints.

Nick: Well I have had the feedback that they minded filling out the question box. Especially when I asked a student if he added his question to the list, and the student said "Oh but it is just a bug so.."

Moderator: We'll discuss the new interface shortly. Were there features that you dislike of the previous system.

Peter: I missed some features.

Steven: Before the vacation there was a really bare bone edition of the site. But after the vacation some features stopped working. The notification that when the lists were empty, and a student would add themselves the TA would get a notification that the lists weren't empty anymore.

Peter: [nods yes]

Steven: It is already fixed. But it was really annoying to use the system without the notifications because at the start the sessions were very quiet, and if you wanted to work for yourself as TA you missed the new people on the list notification. It is also the inherent disadvantage of such a system, you create a distance between the students and the TAs. On the one hand it is great that you do not need to shout names anymore, but on the other side they used to walk to the front of the room and you would see and notice them. Now students can very quietly add themselves to the lists. The heads-up or notification is necessary for this system to work.

Nick: [nods]

Peter: Otherwise you need to continuously switch screens to check if someone added themselves to the list.

Steven: Yeah, the content switching is annoying. Notifications are clearer.

Moderator: Oke. Well you have all used the new version, what are your first thoughts?

Peter: Well I demolished it at my first try [laughs]

Steven: [laughs]

Moderator: [laughs]

Peter: I have to admit it was my fault.

Steven: My very first impression was, but apparently Aron was still updating it, but my first impression was, "Wooh this is very flacky, I wonder if this will work". Ehm, that is also because of the design. On the one hand I love the dark-mode, on the other hand there are elements that I dislike. But during the session I was happily surprised.

Peter: me too

Nick: [nods]

Steven: I think that the idea of the labels or badges or how you want to call them, that indicate on what topic someone has a question or on what week they are working, I think that is a valuable addition

Peter: I agree,

Nick: It gives you a bit more context than only a name. You can prepare yourself apprehend.

Steven: Yeah, you now apprehend with what idea you are going to go to someone. And I think that is good.

Peter: Some people had a bit of a good question, that was good, and some people just wrote a dot or “help me”

Nick: But I didn’t see that very often, because when I saw it I told the student to improve their question.

Peter: It could have worked, but students didn’t use it properly. Some of them had good questions and some of them just wanted you to come to them.

Steven: Yeah I have some feedback on the question system, but I guess that we will discuss it in a different question

Moderator: Yeah you’re right there will be more categories on this topic. But for the first impressions this was good. Nick, you said that you address the students that did not write a proper question, did that help?

Nick: Well, the only time I addressed the issues it was a false accusation, because there appeared to be a question in the end. But I think it would have helped, especially because I think that the questions have an additional value to the simple fact that they communicate the question to me. But that is a different topic.

Steven: I think I know what you mean, and I totally agree.

Moderator: Yeah. Firstly, well talk about the features of the new system. Which features did you like, and which did you dislike?

Peter: That you had course wide lists. Every room about the same layout. Because, before you had different lists for every room, and that made it hard to switch from room to room. The standardization was nice for me.

Steven: Yeah, unknowingly this new version takes away some options for the TAs by determining the content of the lists in the admin view. But that has the advantage that the list are, much more consistent over the rooms and no more messing with the lists. Because sometimes we see in the eight rooms eight different designs for the lists.

Nick: One room puts the design before the questions and the other sets design at the end. They use different conventions for the names.

Steven: Sometimes we see desynchronization, when we have decided in the TA meeting that we wouldn’t discuss design questions this week, because we expect the students to be busy with programming questions during the tutorial and then you see that one room did make a design list. At that moment you are not going to say something about it, but actually we agreed to leave those out. So, they shouldn’t make that list, because you give people the impression that you are willing to handle design questions, while we had decided not to because of the planning.

Peter: You were still able to add room specific lists in this version. I liked that. Imagine you want to make a specific list for your room you were still able to. I liked that.

Steven: Besides, what I mentioned in the first impression I liked the idea of the badges, because you are kind of informed when you go to the student what the subject of their question would be. I did notice that I do use my experience with tutoring. I did not need the questions that much, I found them less useful. But when I see an exercise tag and a category tag, I immediately see the two questions in my head that they are probably going to ask. But as I said that has a lot to do with experience, because it doesn't apply to every TA.

Peter: When you are a TA for the first time, you don't know that exercise 5.3 is "this.."

Steven: No, exactly

Peter: I happen to know that [laughs]

Steven: Yeah, yeah

Moderator: Yeah, okay. And these were mainly things you liked. Were there also features that you disliked or that frustrated you?

Nick: Well, it wasn't a frustration, but the color scheme was very "in your face"

Peter: Yeah [nods yes]

Steven: Well there can be twisted a lot about design. I don't know if it will be a topic of discussion today? Because I have a few ideas about the design.

Moderator: Well, it wasn't on there yet. But we can take some time in the end.

Steven: I agree with you Nick, but I have some specific side notes. Not everything was necessarily bad, especially the underlying concepts are good, but the execution wasn't brilliant. So, I think there are some concrete points of improvement, that are practical, not particularly styling. Styling continues to be a personal preference issue.

Peter: indeed

Nick: [nods yes]

Moderator: We had a theme toggle, so you could switch from a dark to a light theme, but we had some issues with the loading of the pages and the themes, and not enough time to fix it. So, we decided to cut it out at the last moment. That would also have been better for the beamer view. But we couldn't get it working before the pilot started.

Steven: No you are right on the beamer the dark-theme version doesn't work, but there are other environments where I see a lot of potential for the dark theme.

Moderator: Cool, we'll discuss that later on. Let's see. What functionalities or features do you think should be added?

Steven: Oei

Moderator: Yeah, it can be anything

Steven: Exactly it can be anything. You can add so many things...

Moderator: But if you were able to add one thing. What would it be?

Peter: Do we need more, that's the question?

Steven: I like the extension script a lot, I would like to see it build within the site.

Peter: Yes, the room statistics.

Steven: The room statistics from the extension script offers something extra. In my room, when I am not busy, especially when there are no sign offs, while other rooms are busy. If you work with parallel tutorial sessions in different rooms, it is very nice, especially when the rooms are close to one another, in the citadel we have five tutorial rooms close together, then you are able to go to another room if your room is quiet and in another room they are really busy. This is under the assumption that you have an easy overview of the work load in the rooms. The site doesn't offer that now, so without the extension you have to click on all the rooms to see their queues. It is also in the benefit of the student, because you want to help them as fast as possible and you don't want the system to have a really long queue with questions. So, if you are able to help in a different room with a long queue this would be beneficial to the student.

Moderator: Other stuff you would add?

Steven: In that sense a button for the TA to notify the other room that they need extra help.

Moderator: Ah, a help-me button for the TA

Steven: [laughs] yeah a TA-help.me button for the TA.

Nick: [laughs]

Steven: Now you see, it remains looking at numbers. And a tendency view in the extension could help show if the lists in a room grow or sink, but the numbers don't really transfer the need for extra help. Now we use a whatsappgroup to communicate this need, which is fine, because whatsapp is a low threshold application for communicate. However, during a tutorial I don't look at whatsapp, because I am busy.

Nick: No, I agree. You shouldn't be busy checking your whatsapp messages.

Steven: You miss a lot of these messages that could be useful. Eventually you could expand this to a TA chat, a chat where TAs can ask for help and ask each other questions.

Peter: Oh [looks interested]

Steven: A chat only for the TAs that are in the tutorial sessions. This would also be good for question asking. Because sometimes you have a room with several inexperienced TAs, and I notice that I do not read their questions on whatsapp, but I suppose I would read the questions sooner on a chat on the site.

Peter: I do read the whatsapp during the tutorials, but I think it appears unprofessional to look at whatsapp while you're working. I peek shortly to see if something is happening.

Steven: Yeah, I agree, but I'd rather not. The chat could help and then you don't need the button to ask for help, you can just ask it in the chat.

Moderator: Yeah, clear. Have you had frustrations while working with the new version?

Nick: I had one. At one point there was someone who wrote a question, but when I wanted to choose that person to announce that I wanted to help them their question was not on my screen. I don't know why this happened. Is there a time difference between the application of the question and when you want to ask the question? I think it is at the same time right?

Moderator: Yeah, it should be at the same time.

Nick: It could have been that it just happened once at random with me, but ...

Steven: What was frustrating for me, I don't know what happened, but sometimes the question doesn't appear correctly at the recent view. Sometimes the question jumps to a different author.

Nick: Yeah

Steven: It jumps to a different person who did not ask that question. It should be a technical flaw, it is definitely a bug, but I don't know why it appeared.

Nick: It is important, that when the question is in the recent view, that one, the question is correct, and two from who the question is should be correct.

Steven: Yeah

Nick: Eventually you'll find out who asked it, but it is inconvenient. Okay so you [looks at Steven] have seen it as well.

Steven: yeah, I saw it, but I didn't give it much of my attention because I was busy.

Moderator: Good to know, cause otherwise we wouldn't have found this bug. Okay, let's see. Did you encounter frustrations from students during the tutorials?

Nick: only a light resistance to the fact that they had to type out their whole question. And that they are five click further before they can ask their questions. Maybe, it could help, what you see right now is that they get a lot of page refreshes before they can ask a question. If you could combine the choosing of the category in one-page interface, it is completely artificial, but that with javascript it will be loaded within the same page.

Steven: Yeah, because then you could just click, click, click on the same page [makes a downward motion with his hand] because you only have to move you mouse down. And what I was thinking as well, especially for the larger weeks, if you make a subcategory for every exercise that you have such a [shows with his hands a large gap] list to choose from. Since they all have the same name "exercise 7.something" you can now follow them by order, but it is hard to read. I was thinking a filter within the categories could help, that you could type in you exercise and it would find your category.

Nick: that you use the select 2 widget

Steven: Yeah, something like that. This is all to improve the selection of the category, because I am convinced that the categories are valuable for us. I think if students want to ask a question they are already stuck, they are stuck with their assignment, so they want to have their question answered as fast as possible, but now they have to type out the whole question. There are advantages to typing out the question, but not everyone uses it properly. People are trying to short cut the system to get as quickly as possible on the question list. The risk is that you get, frustration upon frustration. Not especially with the system, but it starts with the frustration that they are stuck with the exercise, then they need to go through the system, but if the system works against you then you get really frustrated.

Moderator: Yeah

Peter: Are the people who have those frustrations the students who usually complain as well? Because the students in my group who complain, complain about everything all the time. Haters, that like to hate.

Steven: I don't have a lot of haters.

Peter: I have a couple

Steven: Surprisingly so I don't

Peter: Their voices are louder than those of other students. And I understand them, but it is also nice for the people who usually come. I didn't notice the difference that much. Everyone was like: "cool dark-theme"

Steven: It is also the matter on how you approach a hater. But that is an entirely different topic.

Peter: I mean the haters are more the people who are pessimistic

Steven: I understand, but I have strategy on how you should approach pessimistic students. But we'll discuss that some other time.

Moderator: I agree, let's get back on topic. Should students, this is a different topic, now students are able to see each other's name and the different tags, should they see each other's question as well?

Steven: It could probably have an advantage. It has pros and cons. The disadvantage is, there are a couple of students who think that they are not that good at programming. While I usually think that don't perform below average. But they have convinced themselves that they are worse than the rest. I think the disadvantage is for those people, because they may think that their question is a stupid question and that other might see it. The advantage might be, that you force the students to ask more useful questions. A sort of "Wall of shame" idea, if you as a student would fill in a bunch of crap, other students would think well [inaudible]

Moderator: Yeah, it wouldn't be strange if people who ask a crap question don't get help

Steven: I guess students would find it funny to mess around at first, but it makes it possible for the TAs to discuss with the students that if we see such questions that we get the tendency to first help the students who have a concrete question. Because now you cannot make it negotiable, because we can see the questions, but the students don't. And then you are talking about something of which they have no notion. I really like transparency, especially in our level of education, so I would be pro showing the questions.

Peter: Than you can get the fact that students fill in a dot as question. Instead of asking a stupid question they will fill in a dot, because the TA will come anyway.

Steven: I think that you are then able to discuss it, under the guise of transparency.

Peter: And what about students who are bad at English? The cannot formulate their question well enough, in text.

Steven: Yeah, that's a good question

Nick: but how are we supposed to help them if they are not good enough at English?

Steven: In my opinion, students that are not good enough in English, that is a whole new level of concern.



Peter: I mean just in writing. I have a couple of students who are not good enough at writing in English, but I am able to communicate with them. Just the putting it in text would be a problem. I have seen their Design report and it was broken English.

Moderator: But isn't it good if you could say in the first module, "we think that your English isn't sufficient. You have to improve it, or otherwise an English study isn't suited for you?"

Steven: Yeah, or get some English courses. But I don't this is a problem we need to solve.

Moderator: But I do understand your point Peter, that it could scare the students with the broken English if their questions would be projected on the board.

Nick: Yeah

Peter: Because there are a couple of people who have broken English

Steven: I do think though that this is of the same caliber as people who are scared that their question might be a stupid question. Because it could happen that a student ask a question of which a certain type of people think that it is super easy, and you have to prevent that as TA. There will always be students who are very good at programming and who think that every question of other students are trivial, but that is unfair.

Peter: Yeah

Nick: Yeah [makes a whip move] "Whoot-tsshh"

Moderator: Yeah, but if you make it more transparent then you are able to correct their behavior.

Steven: I really like transparency. So, I would like to be a TA that makes it clear to students why we do certain stuff, also in the organization, especially when they express criticism. This is also how I address haters, by asking them if they have thought about why we do things a certain way. "We don't want to bully the students, that is not why we are here." Sometimes you have to remind them of that.

Peter: Some students appreciate that as well, when you tell them that you don't pick sides, that you are neutral

Steven: yeah, it usually helps to be transparent

Peter: Yeah

Moderator: Let's get back on topic.

Steven: Rightly so

Moderator: We are going to go to the next topic. This was the one where we discussed if students should be able to see each other's question. The next topic is: should students be able to edit their own question? Or the question of someone else?

Peter: Own questions, yes. Questions of others no, because they will mess around with that.

Nick: Yeah [laughs] Absolutely not edit the question of others

Steven: No, the questions of others not, because

Peter: Within a group of friends they are going to mess around

Steven: "name" will definitely mess around with that  
[laughs]

Peter: [laughs]

Steven: they mess around continuously, they even achieve to mess around without permission

Moderator: Oh yeah

Steven: "Sometimes I have to say to "name" sit down at go do something with your life, instead of talking shit." To be able to edit each other's question is a bad idea, to edit your own question however, I think could be a good idea. Because it could be that they try to solve their question on their own while waiting on the TA, and sometimes their questions changes in the meantime. They sometimes get a new insight, sometimes they solve their problem entirely, then they need to get out of the queue.

Nick: I was thinking that it would be useful, that the old version would also be visible for the TA. That is technically possible, but I am thinking about how you could assimilate this in a UI.

Peter: Is it helpful to see the old question?

Nick: Yeah, especially if the student converts their original question to a dot. Then you could see what happened. Although it is their own question it would be useful to see the old question.

Peter: Yeah

Steven: Yeah, yes I agree. But I do hope, students wouldn't change their own good question into a dot. But yeah you never know.

Nick: yeah

Moderator: It could also be the case that the students changes a questions that was also chosen by someone else as there question. When the author of the question changes it, it

has to stay the old version that the other student chose. You would probably keep both students in the list.

Nick: Yeah you're right

Peter: Yeah

Moderator: We didn't implement the changing your own question, because we hadn't figured out how to manage the list when students change a question that is not yet accepted by the TA. If the author would edit his question it would change the question of everyone who tagged along.

Nick: Ah, yes I see the problem

Steven: Yes, that is a problem that has to be figured out first.

Moderator: Exactly it is something that we have to think about, but it is a correct remark. For the pilot we managed that the TA had the editing options, so we would have some overview.

Nick: Smart. You could fix it technically by duplicating the question when it is edited.

Steven: Yes, that is an option, but there was probably not enough time.

Moderator: When we duplicate you miss the spelling correction, that someone might do when editing their question.

Steven: Yeah well this is a hard problem.

Moderator: Exactly. Because of the time we will continue to the next question. How do you choose who you will help?

Steven: Okay, well uhm, the funny thing is that we do not really choose. We manage a fair queue system, where first in first out is the rule.

Peter: Yeah

Nick: yeah

Steven: What we also do now. We have the sign off list and the questions list and we have some sign off sessions where the sign offs are prioritized. But in most sessions the questions have priority. But within a list it has always been FIFO. This system could, I have talked about it with some people, change the way students are chosen. But then we would need some extra functionalities. It would be great when some people have only prepared a certain week that you could say "Oke, you will only sign off week ... and you week ..."

Moderator: With people you mean TAs?

Steven: Yes. "You will do week 4 and I week 5, because I have only prepare week 4..." You would also be able to divide the questions on expertise level. What the system now lacks and would be crucial for the expansion is a filter. That you would be able in the TA-view to filter on all the questions that match "week 4 or something like that" or sorting the list. That you can get all the week 4 questions to the top of your list view. Because this is completely absent now. For short lists this system works fine, but when you have a lot of questions this system will not help with the choosing. So, if there would be a session where the lists are long, I see a problem.

Nick: On the other hand, I don't know if I want four filters above my lists. [makes a doubtful face]

Steven: No, so you should really consider how you would design these filters.

Nick: Yeah

Steven: I think that this in the user interface won't be trivial to design this.. But I do see the benefits.

Peter: But you won't have a fair queue anymore. That would be for me [makes a non agreeable face]

Steven: Ah yes, you should discuss if you would need to change the FIFO rule. But I see the benefits of such a system. In programming paradigms we already deviate from the FIFO system, to a system where you can ask questions per expertise. Because in those tutorials there are TAs that have a certain expertise and only answer those questions. In that course it would be nice if you could sort on the tag of the category.

Nick: [nods yes]

Steven: During those sessions you are able to ask questions about every topic, but the students are used to the system which is not FIFO, they are second year students, so you can explain that there will be more TAs but from different expertise levels and the students appreciate this, because they know that when someone comes to help, that they are able to help them with their problem. That is very important. You could argue that the student won't be helped first, but they will be helped by the right person.

Moderator: I have asked students if they would mind it when a TA helps someone else first, and they said, they didn't mind.

Steven: No, so [hand gesture]

Moderator: The only time they did mind was when it was their last question or sign off before they could go home.

Peter: Yeah that is often a frustration for students

Moderator: but it remains a personal issue of students which I don't believe you can prevent.

Steven: Yeah, there is no good way to prevent that.

Moderator: No, but it is okay.

Nick: They just have to accept that when they sign in on a list half an hour before the end of the session that there is a reasonable possibility that they won't be helped.

Peter: Yeah

Steven: Yeah

Moderator: Yes. Aron and I also discussed if you should be able to close the list before the session is done.

Peter: Oh, freezing of the list. [looks interested]

Steven: I had suggested this to Aron. Because I see a benefit to this feature. I called it the closing of lists, which is different from removing the list, because the list still exists but students can't add themselves to the list anymore.

Moderator: Yes

Steven: This is in agreement with the opinion of \_\_\_\_ he was always punctual in his tutorials if you see that the sign off list is long and you are able to estimate that you will not be able to finish the list before the end of the session, than you should close the additions to the list. You shouldn't give students false hope, that they might be helped, you know we have an overload in the list. These people we will help, but only those and no more. To be able to force this in the system, when we worked with the whiteboards you saw that sometimes students tried to sneak their name in the list after it was "closed", but the closing was a threshold, because the students had to walk to the front if they wanted to sneak their name on the board, and we could see that. With this system it would be way easier, because the students won't be able to add themselves. In this module we haven't needed this feature, yet. But in the previous module it would have been very useful.

Peter: Yes, because now we had to help the students half an hour or more after the session was done. "Okay I give you the chance to sign off"

Moderator: Yes

Steven: Yeah

Peter: Only because we didn't have the time to finish in the session.

Steven: So, I am still in favor of this feature.

Moderator: Yes, we can see if we can make it. Okay, let's see. We have talked about how you choose who you want to help. Have you had the opportunity to ask several students to come to the front to be helped simultaneously?

Peter: No

Nick: No

Steven: No. I think that it did not occur, because this feature is useful when you get a lot of questions, then the queue will fill with people with the same questions, then it would be useful to help students simultaneously. However, during the sessions this week we were able to work through the queue quite quickly. We didn't have a long queue, and then you don't get a queue where two people with the same question. I have to say that I didn't notice similar questions. [Looks at other TAs]

Nick: Me neither

Peter: I think this didn't happen, because some students are at week 4, some at week 5 and some at week 6. This week it would be coincidental if students are at the same week, at the same exercise and have the same question at the same time.

Steven: [nods yes]

Peter: At week 2 the students were about at the same exercise than it could happen that student ask the same question at the same time.

Steven: I think that this feature would have been useful for us in week 1 or 2.

Peter: Or for instance with people with standard questions about objects.

Steven: I would have had a couple of questions that would have been useful then. But now you see the problem that there is a lot of diversity in progression of the students. Some are really far, some are lagging behind, and that's when this feature is less useful. But I do see the potential of the feature for different courses or other sessions where this problem doesn't occur.

Peter: I don't think useful, I am not concerned about usefulness, but about that the situation didn't occur, because the chance is very slim of have two or more students with the same question at the same time in the same room.

Steven: But I can imagine that the situation occurs when there is less diversity.

Peter: I agree

Steven: For instance, take module 3, that course has a couple of tutorial sessions where the content will be available online at the beginning of the session and at the end of the session they have to be finished.

Nick: Oh yeah [nods yes]

Steven: That session everyone is at the same point

Peter: Exactly

Steven: And there you see much more, it is about math and stuff like that, there you see a lot of the same questions and the feature would be useful.

Moderator: Yes

Steven: But here there are a lot of questions but because the students are at different points in the content it becomes hyper individual.

Moderator: Nick, what do you think about this?

Nick: Well I agree with Steven, I don't have a lot to add to what he said. The only thing I have to add is about the fact that students have to formulate their questions, because that had hopefully a positive effect on learning, because they have to think for themselves first, about "what is my problem exactly?"

Steven: [nods yes]

Nick: We could discuss to what extent students actually formulate the questions because sometimes they are really vague, but now they actually think for two seconds about their problem and this could help.

Steven: Yes, I see the added value of that. For that reason alone, I would like the students to actually type their question even though I think that we don't always have the time as TAs to use this usefully. I will explain myself later. But anyway, let them think about their problem first. It used to occur a lot that you went to a student as a TA and the student would say "It doesn't work"

Moderator: Yeah

Peter: Oh yeah! [agrees with Steven]

Steven: "That is nice, but why doesn't it work? What have you tried? Where are you?" You immediately get these follow-up questions. By forcing the students to type out their question, you can even, on the basis of transparency tell the student when they type "It doesn't work" that the student needs to be more specific the next time.

Steven: At least you now get the week and what exercise the student is at. The problem with the system now is that you can edit the question of the student, however when the session is busy then this doesn't have the priority of the TA. When it is busy the priority is to help as many students as possible. I caught myself not making time for this.

Peter: No

Steven: So, that is a disadvantage of letting only the TAs that have just helped the student edit the question. But I do agree with letting the students think about their question.

Moderator: Okey. We'll continue. Now the students had to add which week they wanted to sign off. Someone mentioned after a tutorial that it could be useful if you would be able to add several weeks at once for sign off. My question to you is how would you like the sign off list to work? There are a couple of possibilities, for instance that a student could add several weeks at once. But imagine that you had discussed in the teacher TA meeting that certain weeks have priority. For instance, week 5 has priority and a student wants to sign off week 3,4, and 5. How would you like the system to work at such a point?

Peter: We used to have several lists for the sign offs and the weeks that had a low priority told so in the title of the list. Last Monday if I saw week 3 I skipped those students, the students know that they are lagging and will be signed of later.

Nick: I do have an opinion about that. But that is for after this interview.

Steven: Oh because it doesn't involve the system. What I would like to add, that I had a couple of students that had signed off mostly of week 4, but I had found some flaws. Anyway, there were a couple of questions which they had to improve. The students were also pretty far at week 5, which they also wanted to sign off and I even believe they started with week 6 in the end. Now if they wanted to sign off their improved assignments, they had to go through the sequence of buttons several times. To add themselves for several weeks, even if you have to sign off only a little bit. If you would be able to say which questions you want to sign off, but you should only add that if you can speed things up for the student by giving them checkboxes of what they want to sign off. Otherwise it is too much trouble to add yourself to the list. I am thinking about a good way to achieve this. It is actually very annoying, when you had several lists you didn't notice this. But if someone needs to add himself per exercise that he wants to sign off it would be possible that they would be in the list five times. [makes a hand gesture of taking a lot of space in the list]

Moderator: Yeah

Steven: I would rather have one entry. Because when you are signing off as TA you are going to go through all the entries anyway.

Peter: But I also had students that wanted to sign off three weeks simultaneously. Now you get that they are in the list three times, and I could choose to sign off week 5 first and then leave them on the list with week 4 and 3 for when there is time left.



Steven: [nods yes]

Peter: And the students know this, if there is time left that I will help them sign off low priority weeks.

Moderator: Yeah, this is exactly why we designed it this way, because Aron mentioned the same a Peter has. But it is also why I address this question, because we were not sure about the right approach. I would really like to know what you would like to see. Also ,what you said Nick, about being of a different opinion then the rest. I would like to know because maybe it should be done differently. You could also have that the students should add with checkboxes which questions they would like to sign off, and that the TA can checkbox the questions that they approve. This enables the overview of the progression.

Steven: Or at least that you could say that you would like to sign off several exercises at the same time. So, the first category individual and that within this category you can choose which exercises you would like to sign off. This makes it technically a bit more complex, but it would be more versatile.

Moderator: Yes, so you would keep the weeks apart, but the rest is within the one entry of the student

Steven: The first entry of the category you have to choose between the weeks and after that give the students one page to add the subcategories of that entry that need to be signed off.

Peter: Exactly

Steven: Because I think it is useful to know if the sign off of a student is for one part of the week or the whole week. Sometimes this can help to estimate how much time it will take to help the student. And what I have to prepare to be able to help them sign off.

Peter: What I do is I keep track of where the students in my room are at. If they have only one question left than I can help them quickly.

Steven: But the reason that this works for us is because we are groups TA's so you see the same group every week. But the other TAs don't have that luxury, so this wouldn't work for them.

Nick: No, I don't have to try that.

Moderator: No, to remember all those names and faces.

Nick: I have seriously seen 150 faces already, how should I be able to remember them?

Steven: Yes, exactly. I have a hard time remembering all the names of my group and that are about 24 active students.

Nick: But we're getting a bit of track I think

Peter: [laughs]

Steven: You're right

Moderator: Yes. So, I heard it would be good to have more insight in the progression of the students, do you agree?

Steven: Yes.

Peter: For group TAs it is also an idea about how, at least I do not ask every student "he, at what exercise are you?"

Steven: No, but it gives at least an impression. Because the sign off list can give a very different impression, there have been times when the sign off list looked very dramatic. But the students did want to sign off, but didn't have the time or the sign off list was very busy, so the list with what students want to sign off can give a better view of what their progress is.

Nick: Yes

Peter: Yeah

Moderator: Okey. So, imagine you want to prioritize one week above another. How would you like the interface then? Would you like several lists, now all the sign offs were in the same list and you could distinguish with the tags which week they wanted to sign off.

Steven: Well the crux is, if you put them in one list, if you say the policy is to prioritize weeks above each other, it is not weird to put them in one list. We used to have several lists, to be able to distinguish what the students wanted to sign off, but indeed we treated them as one list, first we handled the priority list and then the other. So, you could say we treated the sign offs as one list. Questions however, is not in one list with sign offs because you want to be able to do them in between signing off. If you have a lot of TAs you can agree to have three do sign offs and one to help with the questions. But I can imagine that it would be useful if you could sort the sign off list on the first category, that everyone with week 5 gets to the top and week 3 at the bottom. More lists were not by definition better.

Peter: No

Steven: It originated in the previous interface, after three lists the interface would wrap the list below the others. That was annoying, because with the extension script there was a flex box for the alignment, but now the layout becomes really weird. It gives a weird layout.

Nick: Yeah, flexbox and dynamic content are difficult. But that is a whole different topic.

Steven: There are solutions, but not in this interface, so now it is not fit to contain a lot of lists. I like the layout as it is now with less lists, and that the week is added to the entry of the student.

Peter: But it is a specific module 2 problem

Steven: No not specifically module 2.

Moderator: I think several studies prioritize sign offs.

Steven: Yes, and I think that we use it in programming paradigms as well.

Peter: I meant the number of lists. So, more than four lists.

Moderator: Ah, okay.

Steven: Well we have also had it in programming paradigms, where you want to distinguish in courses, there you have now a questions list for every course. But with these badges you can make 1 question list and the TA of the course can sort on their badge. No more using five or six lists for all the different courses. I think less lists would be better.

Peter: Yeah

Steven: Less is more. So, there are definitely more module who could benefit from this.

Moderator: Okey. That was clear. Now the categories where the week, then the exercise and then the concepts that appertain that exercise. How specific should this be? Was this specific enough or should it be more specific?

Steven: Personally, I think that, I don't know exactly because I think you should ask the students this question, but from the perspective of an experienced TA I do not have to know more than the week and the exercise. The concept doesn't help me much. Yeah I could maybe strikethrough one question and then I would know that it is a different question. But an exercise is already a small unit in our case, the total exercise is already divided in steps, so one exercise is already so specific that I don't need the extra concept. But it could be that the other TAs see this differently.

Peter: Only the subcategory JML was helpful, because some TAs are not that confident about their skills in that subject so they would ask me to help.

Steven: ah okay yeah

Peter: So, I thought that was slightly useful. But you could also argue that as a TA you should master the content, but that is a different discussion.

Nick: Yeah okay, I haven't used it at all. I have maybe used the week, even the exercise number didn't tell me much.

Steven: Yeah, because I am very familiar with the content because of experience, and because I read at the beginning of the week the questions of that week so I have an idea what the exercise could be about.

Peter: same here

Steven: I at least know under which topic an exercise is placed. But the concept category is not useful for me, but you should ask the students if it is useful for them.

Moderator: Yeah, that is something that we are doing with the questionnaire. The concept category was designed to see if students ask more specific questions if they need to add a specific concept category.

Nick: That it would be more a tool to guide them in asking the question?

Moderator: Yes

Steven: I should confess that I didn't see an improvement in the way in which students ask questions. I don't know if this is a long-term effect or that it should have happened by now. But I haven't seen an improvement.

Nick: Yeah in that way yeah

Moderator: How about you? [looks at Peter and Nick]

Nick: I meant that the question that they type in TA-help.me would become more specific, but not that the question students ask TAs in a session improve.

Steven: Well I don't know if it added values, because I have also seen students ask questions in the other category of which I was sure there was a better subcategory in which they could have placed it. Specifically, with questions about JUnit. That students would ask a question about JUnit but place it beneath other. This can mean two things, they either don't understand that their question concerns JUnit, or they didn't bother and click "other, other, other" to be able to ask their question as quick as possible. But that is hard to guess.

Moderator: I know that the JUnit was a subcategory of testing, so it could be that students didn't know that JUnit is testing and therefor didn't find the right category for their question.

Steven: That could be too deep a category

Moderator: Yeah, it would expect of the student that they understand that JUnit is a subcategory of testing.

Steven: Yes, that is something that would be desirable if the students grasp that. But we know that we understand these terms, but it is not necessarily so that students get it.

Sometimes, it takes a while for a before they get it. This will lead to them clicking on other because they need to be able to ask their question.

Nick: Yeah

Moderator: I think the hour is over. I don't know if you have more time, because I do have a couple of questions that we could discuss.

Peter: I'm fine

Steven: I can stay

Nick: I need to go in a couple of minutes.

Moderator: You are allowed to leave. Thank you very much for you time. Please remember that this was a confidential discussion and that you can discuss what you said in here with others but not what the other participants mentioned. And your input will be processed anonymously.

Moderator: Okay, I am at question 11. Who should be responsible to check if a question is a good question, and when should they check this?

Steven: Well this comes back to something that I have mentioned before. This is an unsolved problem. Who could estimate if a question is a good question? In our case I think the TA. I can imagine that at a certain point there would be questions that the teacher wouldn't know, because at our study we depend on TAs to solve all the technical problems, the teacher helps the students with the theory, but we handle all the side problems. So, a TA that still helps with the sessions and is familiar with the questions students have should be the best option for checking the questions.

Peter: But

Steven: But, when? Which is an unsolved problem

Peter: It takes too much time. You can read the question and think about it quickly, but only after you have spoken to the student you will know if a question is a good question. Sometimes, it is to global, then you get to the student and they asked a global question because they didn't understand what they were working on. In retrospective you can say something about it but apprehend you can't.

Steven: It is hard to judge apprehend if a question is correct. It depends on the level of the student. So, when? I think that there is no time left during the sessions to edit questions. To say that a TA would check them outside of the sessions [mumbles] imagine that the questions will be saved.

Moderator: That is the idea.

Steven: Well if that would be so, that you could assign a TA to check the questions and save the good ones for the next year. On the other hand it takes so much.

Peter: You could make a FAQ

Steven: Yeah, an FAQ with answers. It sounds like a good plan but, the execution will be questionable. I don't know if there is willingness to take on this task. I shouldn't take this task on.

Peter: It should be an experienced TA, you don't want the teacher or a young TA to do it.

Steven: Exactly. The teacher couldn't do it because he wouldn't see certain edge cases, because they haven't helped with the sessions. But during the sessions it is too busy.

Moderator: That is why I asked the question. We thought let the TA edit the question during the sessions, but you see when it is too busy this task loses all priority, logically. Maybe a solution is when you make the categories for that year, because you could select which categories still apply, that you could select the questions from last year that you want to be visible this year. In that way you can create a good question list over the years. It would take the TA one time a review, during the sessions of the year all the questions of the students will be added and that the next year the only the good questions will be selected.

Peter: Yeah

Steven: I see that work. Than you use data mining to get your dataset. This is not unusual, so I think that could work.

Moderator: The categories need to be added as well, it took me one day to sort them out, so it won't take that much time to review the questions.

Steven: Yes, and the next year it will be less work

Peter: yeah

Moderator: You could also say review the questions once a week

Steven: [nods yes]

Peter: I would say during the meeting with the TAs and the teacher than you have all the TAs that were present at the sessions and the teacher together. But we don't have enough time during the break.

Moderator: The next question. But I think I know the answer to that already, because you mentioned it already. Who should be responsible for the category list? You mentioned the TA, but it could also be the teacher.

Steven: Well I think the teacher will delegate this to a TA and with a good reason. We have such a large group of students that the teachers are already very busy. This is a task that a TA can just as well.

Moderator: Yeah

Steven: In principle the teacher would be able to do this, but in most cases the teacher will find a TA to do this for him.

Peter: Yes, yeah

Steven: It not really a matter of who should be responsible, because this will probably be the TA.

Peter: It should probably be an experienced TA, but I do not foresee any problems with that, because they have to go through the exercises anyway, they know where which problems will occur, based on that it won't take more than an hour.

Moderator: It wasn't that hard

Steven: The clue is here, who should be responsible? I think a TA that is chosen by the teacher.

Moderator: From the exercises that were in the manual the only ones who were hard to categorize were the ones that did not specifically state the concepts in the question, in total this were about 6 exercises.

Moderator: Than I have a last question stated here in my guide, after that we can talk about the design. Would you like to see in the queue how long a student is already waiting to be helped?

Peter: Yes

Steven: Yes

Peter: Yes, sometimes they wait up to an hour or longer.

Steven: Cool, why haven't I thought of that. It would be easy to add to the extension script. You hit the nail on the head because you ask it and we both immediately respond with yes. It is certainly something that we would like to have, but it never occurred to me. But yes, I want this.

Peter: But, only the TA should be able to see it.

Moderator: Yes, certainly. Otherwise students will complain about there waiting time.

Steven: Yes. Definitely true

Peter: Yesterday I was alone in my room, and I couldn't handle both the sign off and the questions, so I decided to focus only on the questions. But had I been able to see how long students were waiting, then I could've switched better between the queues.

Moderator: Yes, good point. These were my questions, we can now talk about the design.

Steven: Yes

Peter: The design was for us not that different, except for the dark theme

Steven: The design had pros and cons. The advantage of the dark theme, which sounds ridiculous but google had recently done a study about this, is that, especially with the new o-led screens, that your battery level will last longer. I like to walk around with my phone and I like the fact that a dark mode will safe my battery. And phone screens are nowadays so good that the contrast in colors is great and you are able to read everything. However, what you mentioned earlier that the theme doesn't work on a beamer. Especially with the beamer lamps that the university has. You don't want a dark theme there.

Peter: The badges actually made more sense on the beamer, because you could see that color better.

Steven: Yeah, but I wouldn't use a dark theme in projector modus. I would also like to add, that the light theme on the projector worked, because if you chose a student, then the pop-up would appear on the screen and the background of the beamer would be dimmed. The difference in light is noticed by students who then pay attention to the screen to see if it's their turn. This technique is also used at schools where students have a hearing problem. By changing the light you get people their attention. Without the students knowing this this worked really well for us. They look up and see even the notifications that they miss on their own laptop on the screen.

Moderator: Yeah

Steven: For the rest of the design, well yeah

Moderator: You are allowed to say anything, don't hold back on my account. I'd rather have honest feedback, that I can use.

Steven: Well gradients.

Peter: Yeah the header

Steven: Gradients, in my opinion, we are in 2018, all the companies use flat design and colors, and fake shadows, students expect this. I heard students say, "a gradient?" "Yeah a gradient, we live in the past for now" [smiles]. It is overly complex to add gradients, in CSS it takes a lot of space, while one color, takes only one line.



Moderator: Luckily I used a mixin to produce the gradients, otherwise it would have been a lot of work

Steven: And about the badges, it is really useful if they have a consistent color scheme. For instance, all the badges in week 7 the same color. But these also don't need a gradient

Peter: Did they have a gradient?

Moderator: Yeah

Steven: Yes, and I would say, delete all the gradients. They don't add anything. You can make it more modern with normal colors.

Moderator: Yes

Steven: By changing the theme there is a bug in the hover, at some places the hover doesn't work, and it is not consistent

Peter: Yeah, it didn't feel as a button sometimes.

Moderator: Ah, this is a mistake on our side, we have to check it.

Steven: oh and also the header doesn't have a fixed height anymore. But I think this is a bug

Moderator: And in roomview you saw something

Steven: Yeah the hamburger menu didn't work on your phone, it did in the other views, only roomview did not work



## Appendix U

### **Focus group interview after testing with TAs 2**

Moderator: Oké hij staat aan, \_\_\_ jij mag beginnen met je voorstellen, je kan gewoon je naam gebruiken die wordt later nog veranderd. Vertel ons hoe lang je al tutorials geeft, dat soort dingen.

Susan: Nou oké, mijn naam is \_\_\_ en ik doe nu voor de tweede keer module 2, ik doe ook vaak module 1, dus dit is de tweede keer dat ik voor lang tutorials geef, denk ik. En, moet ik nog meer zeggen?

Moderator: Nee, hoor je mag zeggen wat je wil. Dit is vooral even om er allemaal in te komen. Dus dit was voldoende.

Susan: Oke

Matt: Nou ik ben \_\_\_, ik ben dit jaar derde jaarsinformatica student en ik ben net als \_\_\_ tweede jaars TA en ik vind het hartstikke leuk.

Sam: Ik ben \_\_\_ en ik ben al ietsje langer SA bij tutorials. Dit is het derde jaar dat ik deze module doe, maar ik heb het twee jaar lang niet gedaan, nu weer wel. Ik heb de eerste fases van TA-help.me wel gezien en ook andere vakken heb ik begeleid.

Martin: Ik ben \_\_\_ ik heb vorig jaar deze module begeleid en dat doe ik nu dit jaar weer en ik heb ook module 1 begeleid. Ik vind het leuk om te doen.

Jack: Ik ben \_\_\_ ik heb de afgelopen twee en een half jaar geTAed ik ben nu zesde jaars student.

Moderator: Dankjewel. Dan gaan we vast meteen naar het eerste onderwerp. En dat is wat deden jullie voordat jullie met TA-help.me werkten? Hoe ging dat met vragen en aftekenen? Zijn hier mensen die dat mee hebben gemaakt?

Jack: Ja als student en als TA.

Sam: [knikt ja]

Matt: [knikt ja]

Moderator: Ja, het is beide goed, mocht je dingen vanuit het student perspectief zeggen, dan moet je dat er even bij zeggen dan weet ik dat.

Jack: Ja als student was het meer dat, wat er gebeurde, dat er op het blackbord, eigenlijk hadden we twee lijsten, misschien ook meer. Het was precies hetzelfde wat TA-help.me nu ook heeft, maar dan zelf opschrijven [maakt een schrijfbeweging in de lucht]. Er waren wat problemen mee. Je moest altijd, je moest sowieso vroeg zijn, anders zat je heel lang te wachten en op een gegeven moment als het te lang werd, moest je pijltjes gaan maken [beweegt met hand van onder naar boven] naar waar het ook alweer heen ging. Het ding moest het uitgewist worden, wat onhandig was.

Susan: Je schreef dus je groepsnummer op het bord, dus iedereen moest naar voren lopen daarvoor.

Jack: En hard schreeuwen.

Susan: Ja hard schreeuwen. De SA's moesten dan elke keer een nummer roepen en dan hopen dat dat groepje dat hoorde en dan reageerden en hun hand opstaken. Dat was een beetje hoe dat vroeger ging.

Matt: Dat is denk ik ook de reden dat Aron is begonnen met dat systeem.

Moderator: Oke duidelijk. Dan gaan we het hebben over de vorige versie, dus een beetje vanaf het begin van ta-help.me tot wat we voor deze week hadden. Dan mogen jullie vertellen wat je er fijn aan vond, of waren er frustraties of iets wat je niet goed vond aan het systeem.

Sam: Het fijnste natuurlijk is dat je die lijsten op het bord niet meer hebt. Dat je niet meer hoeft te schreeuwen. "Waar is dit groepje? Waar zit deze persoon?" Met dit systeem kan je gewoon een knopje aandrukken en krijgen ze gewoon een melding op het scherm en steken ze hun hand op en dat is super fijn. Je hebt die lijst niet meer op het bord dus je hoeft niet meer te klooiën met pijltjes [maakt dezelfde beweging die Jack eerder maakte] het gaat gewoon weg. Je hebt gewoon 1 overzicht van alles wat je nog moet doen.

Matt: Je zou er eventueel nog statistieken uit kunnen halen. Die misschien nog wel het onderwijs kunnen verbeteren.

Martin: Wat je sinds kort dus ook hebt is dat je alle ruimtes kan zien, dus dat je kan zien waar het druk is, dus waar je zou kunnen helpen.

Sam: dat is een Plug-in, een add-on

Moderator: Ja klopt, dat is een extensie.

Susan: Ik denk dat het in het algemeen heel overzichtelijk is, dat je gewoon heel makkelijk kan zien wat waar en hoe en je daarbij niet meer druk hoeft te maken. Net als het feit dat je nieuwe lijsten aan kon maken, dat je wel mensen kon aftekenen die heel ver achter liepen, maar er niet perse prioriteit aan gaf, omdat ze niet allemaal op een en de dezelfde lijst stonden, dat was eerder ook nog wel lastig.

Jack: Ja want in het begin van ta-help.me, was dat ook nog maar 2 lijsten.

Sam: Ja de allereerste versie, was echt alleen maar questions en sign off.

Matt: Ik moet zeggen het heeft voordelen dat je zelf nieuwe lijsten aan kan maken, maar het heeft ook nadelen. Want je wordt wel als student assistent zelf, je maakt zelf die keuze en dan wordt je misschien wel gejudged door studenten, misschien op die manier, maar dan

wordt het tijdens de TA-meetings ook wel verteld, van “oke we geven nu prioriteit aan dit en dit en dit” en dan weet je ook waar je aan toe bent.

Susan: Ik heb wel het idee dat het dit jaar ook soepeler gaat, qua lengte van de lijsten.

Jack: Ja

Susan: Ik kan me van vorig jaar herinneren dat je rond dit punt hele lange lijsten had, maar dat valt me op dit moment best wel mee.

Martin: Ja

Jack: Ja op het moment zit ik gewoon af en toe stil.

Susan: Precies ja

Sam: [kijkt bedenkelijk] Ja

Susan: Maar of dat met het systeem te maken heeft of met de leerlingen, dat weet ik niet.

Jack: Ja, meer inzet van TAs, het zou van alles kunnen zijn.

Matt: Ja

Moderator: Oke, dan gaan we door naar over het nieuwe systeem, dus de nieuwe versie. Als eerste wil ik weten zijn jullie eerste gedachten daarover. Van de eerste keer ermee werken, wat dachten jullie toen? Eerste impressies.

Matt: Nou de interface was erg anders. [glimlacht]

Jack: [lacht]

Sam: [glimlacht]

Matt: Dat is in ieder geval wat je direct merkt. Ja, heel veel kleurtjes, ik vond het wel grappig. Ehm maar het kan misschien voor student wel wat verwarrend zijn, want het was veel vaker klikken en je moet even je weg vinden in het systeem, maar uiteindelijk denk ik zeker wel dat het potentie heeft en dat er wel als mensen bijvoorbeeld dezelfde vragen hebben dat dat wel kan helpen.

Sam: Ik vond het heel fijn om te zien welke week mensen willen aftekenen zonder dat je voor elke week een lijst hoeft aan te maken, dat was wel heel fijn.

Sam: mompelt ja

Jack: [knikt ja]

Matt: en om überhaupt te zien welke vraag van iemand was, nou werkt dat niet altijd even goed, soms werd er gewoon “help” gezet of “please send help” of wat dan ook, maar als er daadwerkelijk serieus een vraag stond, dan kon je zelf even tien seconden inlezen en dan kon je dan iemand helpen.

Susan: Ja

Matt: Dat hielp wel heel erg.

Jack: Ik had zelf wel mensen die hadden alleen een beetje het onderwerp [maakt een omvang gebaar met zijn handen] gewoon “merge sort” bijvoorbeeld, dat hielp ook al een beetje dan kon je op de weg daarheen

Matt: dan kan je [moeilijk gezicht] “oh nee niet merge sort”

Iedereen: [lachen]

Jack: Dan kan je bedenken “wat kon er ook alweer allemaal fout gaan?”

Susan: Ja, en het is iets makkelijker stel ik zou helemaal niks van merge sort weten dat ik dan aan iemand anders vragen van “Goh wil jij deze pakken, dan pak ik wel een ander” dat je niet daar aankomt en staat van “eh [kijkt bedenkelijk] dat weet ik niet”

Jack: Volgens mij dat de meeste mensen, in ieder geval bij mijn groep typten “error” of “exception”

Susan: Ja

Sam: Ja

Jack: en dan denk ik ja

Martin: Ja van die nietszeggende dingen.

Moderator: Ja

Sam: Door mensen die dan niet de moeite willen nemen om dan eventjes te zeggen waar ze een vraag over hebben of het misschien zelf niet eens weten en dan gewoon maar wat invullen van “Ja ik kreeg een nullpointer”

Matt: Maar dat is altijd het probleem met elk systeem, het is vaak goed gedesigned maar dan moet er net wat meer effort van de gebruikers ingestopt worden en dat gebeurt dan weer niet, in elk geval niet altijd. En dat is gewoon jammer, maar daar kan je niet zoveel aan doen denk ik.

Moderator: Ik heb ook expres geen instructies gegeven daarover.

Matt: Oke

Moderator: Ook aan jullie niet. Om gewoon te kijken al je het blunt geeft, werkt het dan?

Susan: Ja

Jack: Ja, ligt inderdaad aan de persoon

Matt: Ja voor sommige groepen werkte het volgens mij wel.

Sam: Ja

Matt: Voor andere niet

Jack: Ja ik heb dus ook mensen gehad, die dus echt hun vraag erin hadden gezet. En dan kom ik daar en dan kan ik meteen antwoord geven.

Martin: Ik heb zelfs iemand gehad die letterlijk de vraag aan het intypen was en daarna kwam ik er even bij en toen was het "Oja, maar toen ik er zo over nadacht, wist ik het antwoord al." Dat is toch [steekt zijn duimen op]

Moderator: Dat is toch goed.

Matt: Terwijl hij de vraag aan het stellen was, dus zelf al het antwoord formuleren.

Jack: Het echte rubber ducky

Martin: Ja precies, dus het werkt wel

Moderator: Oke, mooi. Dan gaan we naar, we hebben het er al een beetje over gehad, wat vond je fijn aan het systeem? Je mag gewoon noemen welke features je handig vond.

Matt: Het aller fijnst vond ik de vragen. Als ze goed ingevuld waren.

Martin: Ja

Susan: Ja

Matt: dan vond ik ze echt helpen. En wat Sam zojuist zei, verschillende weken van sign off.

Sam: Ja

Matt: Dat werkt gewoon heel erg goed.

Jack: Dat je niet 5 verschillende lijsten hebt voor elke week.

Matt: Precies



Martien: Precies ja

Martin: Dan kan je ook nog sorteren binnen 1 lijst. Zo van "ja week 4, eerst ga ik deze week 6 aftekenen"

Matt: Ja, het wordt allemaal wat compacter.

Jack: Ja, precies, maar ik heb nog niet echt lange lijsten gezien.

Susan: Nee

Martin: Nee

Jack: Ik weet niet hoe dat er dan uit ziet.

Matt: Is nog niet voorgekomen.

Sam: Er is nog niet zo'n stress dag geweest waar het echt handig zou zijn dat je weet wie je het eerst kan helpen.

Jack: Ja, ik zie het wel voor me dat stel je hebt echt 15 mensen op de lijst en dan heb je "6, 4, 5" [maakt een handgebaar van boven naar beneden]

Matt: Maar dan na de vakantie zal dat wel gebeuren.

Jack: Zeker

Martin: Zo ja

Susan: [mompelt] instemmend

Martin: Maar ik heb ook nog nooit gehad dat mensen dezelfde vraag hadden.

Moderator: Nee

Sam: Ik ook nog niet

Susan: Maar het is ook zo rustig geweest.

Martin: Dat klopt ja

Matt: Maar je zit zeg maar met tien twaalf groepen duo's in een ruimte die er ongeveer zijn per sessie, misschien iets meer en dan moeten dus twee groepen bij precies dezelfde opgave zijn en precies dezelfde vraag hebben.

Martin: Ja klopt

Matt: Als het zeg maar, TA-help.me breed was, of is dat ook zo?

Moderator: Oh dat weet ik niet.

Matt: Het is toch, alleen als twee mensen in dezelfde ruimte dezelfde vraag hebben?

Moderator: Ja de mensen die in dezelfde ruimte dezelfde vraag hebben, die kan je tegelijkertijd naar voren roepen.

Matt: Ja, precies, dus de kans is heel erg klein dat mensen dezelfde vraag hebben. Als je bijvoorbeeld een ruimte zou hebben met 20 TA en 150 studenten dan gebeurt dat veel vaker.

Moderator: Dat is zeker waar.

Martin: En bij mijn groep zitten niet heel veel studenten die actief komen. Dus dan heb je nog minder kans.

Matt: Ja, oke, maar dat zijn de minor groepen toch? [kijkt Martin aan]

Martin: Ja en de Nedap die er de helft of zelfs driekwart van de tijd er niet zijn.

Sam: Ja, maar die doen het gewoon zelf die doen dat gewoon in hun eigen tijd.

Martin: Klopt. En als ze een vraag hebben dan is dat veel dieper dan de andere studenten.

Sam: Dus dan heb je nog minder kans op een dubbele vraag. [glimlacht]

Martin: Ja [lacht]

Jack: [lacht]

Moderator: Nog andere dingen die jullie fijn vonden?

Susan: De kleurtjes, het werkte wel.

Matt: Ik vond het wel verwarrend in het begin.

Susan: Ja je moet er wel aan wennen, maar uiteindelijk was het wel prettig om naar te kijken.

Jack: Dark theme is altijd goed

Martin: Ja

Sam: Ja

Matt: Dark theme is wel chill ja

Moderator: Behalve op de beamer.

Susan: Ja [lacht]

Jack: [lacht]

Martin: [glimlacht] en ehm, als je voor test doeleinden jezelf snel even op de lijst wil zetten, dat kan nu niet meer.

Matt: Ja, maar

Martin: Je moet echt heel veel menutjes door

Matt: Ja, maar bij sign off valt het mee, bij sign off is het 1 klik extra.

Martin: Ah, die heb ik niet geprobeerd.

Jack: Maar als vragen

Martin: Het is handig als studenten even nadenken over wat vul ik in, dus dat is wel goed. Maar als je zelf even snel wil testen, dan moet je door allemaal van die dingen heen.

Matt: Zou de t zijn, dat de lijsten nu minder lang zijn door het nieuwe systeem?

Martin: Dat denk ik niet.

Sam: Je bedoelt dat mensen er minder snel opzetten omdat je meer dingen door moet.

Susan: Ik denk het wel

Matt: Want normaal is het "ik heb een vraag "klik"" en nu is het "ik heb een vraag" klik, klik, klik, typ, typ typ typ typ, submit.

Martin: Het zou kunnen.

Jack: Ik weet het niet, meestal als mensen om TAs vragen dan hebben ze echt wel die hulp nodig.

Matt: Ja, dat is waar

Sam: Ja, maar

Susan: Nee

Sam: ik denk dat je juist wil aanmoedigen dat mensen eerder een vraag stellen.

Jack: Ja dat wel

Martin: En dat ze er over nadenken

Susan: Ik heb juist 1 iemand in mijn groep die dus continu vragen stelt, gewoon 1 persoon en die is "I guess" gewoon niet zo goed in programmeren en die lijkt wel steeds minder op die lijst te komen. En hij stelt nu echt vragen waar die echt een vraag heet en niet zo van "ik snap het niet, help mij"

Martin: [kijkt bedenkelijk]

Sam: Ja, maar je hebt ook de andere kant van het spectrum, de groepjes die al een half uur op een probleem zitten en dan pas een vraag erover gaan stellen en dat wil je. Je wil verminderen dat mensen echt heel domme vragen gaan stellen en je wil juist dat de mensen die geen vragen stellen, juist iets meer vragen stellen.

Martin: [knikt ja]

Jack: Ja

Sam: Ik weet niet of het helpt om dan juist extra stappen toe te voegen.

Matt: Nee, maar dat is überhaupt ontzettend moeilijk om te combineren.

Sam: Ja, dat klopt.

Martin: Dan kan je het beste misschien een announcement erover maken als je te lang met vragen zit.

Matt: Dit kan beter. Met de statistieken van hoeveel vragen mensen gemiddeld stellen en de mensen die nooit een vraag stellen en pop-up geven met "He stel eens een keer een vraag"

Jack: [lacht]

Martin: [lacht]

Sam: [glimlacht]

Susan: [glimlacht]

Martin: En de mensen die heel veel vragen stellen die ook stoppen.

Moderator: [haha] ja "time out, jij mag niet meer"

Sam: Niet meer dan 1 vraag per vijf minuten.

Moderator: Ja dat kunnen we wel inbouwen ja [glimlach]. Waren er nog dingen die jullie niet prettig vonden of die frustrerden?

Jack: Niet perse frustrerend maar er was ergens de feature dat je de vraag kon editten, dat leek me niet heel erg nuttig. Ik zag er niet echt wat er mee gebeurde.

Moderator: Ja

Jack: Ik gok dan dat ie dan op de lijst kwam. Voor vragen voor andere mensen.

Martin: Daar wordt, die dan afgehaald.

Moderator: Tot nu toe was het dat alleen de SA de vraag kon editten, dus de student kon alleen de vraag sturen en dan kan een SA hem verwijderen of editten en zodra de student geholpen is dan komt die vraag in de lijst. Of die komt sowieso in de lijst zodat anderen hem ook kunnen stellen. Dan zou je dus als iemand een vraag niet goed geformuleerd heeft of er staat een typfout dan kan je die editten.

Matt: Was dat de bedoeling? Dat de TAs dan elke vraag zouden evalueren, van "is dit een goede vraag?" zou ik hem editten?

Moderator: Ja

Matt: Ah, ja. Nu ik er zo over nadenk is dat best wel goed, want dat betekent dat je dan een database krijgt van goede vragen.

Moderator: Ja

Martin: En zij kunnen dan ook kiezen, zeg maar.

Matt: Ja, maar dit kost in een sessie denk ik best wel veel tijd.

Jack: Ja

Martin: Ja

Sam: Ik denk dat de TAs bij sommige sessies daar niet genoeg tijd gaan hebben.

Martin: Ja [glimlacht]

Jack: Ja

Moderator: Ja dat is ook gebleken ja.

Matt: Maar dat komt ook misschien zoals je zei "ik heb juist geen advies gegeven, van doe dit, of doe dat niet"

Moderator: Precies, want als het niet intuïtief genoeg is, is het niet goed, ik moet het ook aan een studie kunnen geven zonder uitleg.

Martin: Ja.

Matt: Ja, want ik zit het me nu pas te bedenken, dat het eigenlijk best wel handig is.

Matt: Wat wel frustrerend was, dan stonden er twee mensen onder elkaar en dan edit je 1 vraag en dan update de andere niet, dan moet je refreshen voordat die andere mee gaat.

Moderator: Hoe bedoel je?

Matt: Dus als je zeg maar bij de laatste drie mensen die geholpen zijn, dan staan er dan als er twee mensen dezelfde vraag hadden, dan staan die dan boven elkaar. Dan kan jij de vraag editten en dan update die dan live, maar om die andere dan over te laten springen moet je refreshen. Dat gaat in de backhand natuurlijk gewoon goed, maar frontend niet.

Moderator: Ja, er was ook nog een nader proleem met vragen die versprongen van auteur, dat was nog een bug

Matt: l'ts a feature.

Iedereen: [lacht]

Moderator: haha, ja, maar we beschouwen hem toch als een bug ;) Even kijken. Zijn er features, je noemde net al de extensies, waarvan je denkt dat die toegevoegd zouden moeten worden?

Martin: Het script van Remco, dat zou er wel native in kunnen zitten.

Sam: Ja

Matt: Alleen wel wat mooier.

Martin: ja

Matt: Want als je nu acht of tien kamers in een course hebt neemt het je halve scherm in beslag. Eh, maar die notificaties die vind ik veel belangrijker.

Sam: Ja die notificaties zijn heel belangrijk

Matt: Maar wel andere notificaties, want nu krijgen we met het script windows notificaties als je windows gebruikt en die stacken op een hele raare manier. Namelijk als jij iet niet weg

klikt en je krijgt een nieuwe notificatie, dan geeft hij je oude notificatie weer. Dat ligt niet aan de site, maar aan windows. Je wil eigenlijk site notificaties.

Martin: Op Linux gaat dit gewoon goed.

Moderator: Je bedoelt toch die notificaties dat iemand zich aan een lege lijst heeft toegevoegd?

Matt: Ja

Martin: Of gewoon aan een lijst.

Sam: Maar die notificaties op linux heb je geen verschil tussen browser notificaties en gewone notificaties.

Matt: Nou op windows, komen ze dus rechts onderin [maakt een handgebaar van inkomende notificaties] dan kan je op close drukken, als je dat dan doet dan komt de volgende pop-up en de volgende pop-up en dan kan je dus nooit op iemand klikken die daar onder staat. Dus dan moet je eerst naar je side bar en alles weg klikken. En dan kan je pas...

Sam: Dat is echt zoooo kut.

Matt: Dan heb je dus 50 notificaties op een gegeven moment, want je krijgt ze van elke kamer ook door dat scriptje, dat kan je uit en aanzetten natuurlijk. Maar standaard krijg je dat van elke kamer.

Jack: Wat je wel hebt met de browser dingen dat je expliciet toestemming moet geven.

Matt: Ja maar dat moet je nu nog steeds.

Moderator: Ja. De vorige groep die ik sprak noemde nog dat het handig kon zijn als er een knop zou zijn waarmee je de hulp kon inroepen van andere ruimtes van andere TAs. Zodat je zou kunnen zeggen, mijn kamer heeft hulp nodig, nu kan je namelijk de kamer inzien en hoeveel vragen ze hebben, maar een nummer is meestal vrij abstract.

Martin: Ja dat wordt meestal via de whatsapp groep geregeld.

Matt: Het nadeel daarvan is wel dat ik als ik het druk heb, kijk ik niet op whatsapp, de hele sessie.

Sam: Dat is wel waar ja.

Matt: Dus, zo'n knop zou zeker wat toe kunnen voegen, ja

Sam: Ik vraag me af of mensen het in de gaten gaan houden.

Matt: Jawel, als je de homescreen van de TAs hebt krijg je gewoon voortaan een bolletje dat zo "Ping" aangeeft dat er een zaal hulp nodig heeft.

Martin: Ja of notificaties ofzo

Sam: Maar dan moet je ook een manier hebben om te zetten, "oke ik ga naar die kamer toe"

Matt: Ja

Moderator: Oja

Sam: Anders heb je vijf mensen die naar je toe komen

Jack: [lacht]

Martin: En soms zitten de kamers gewoon te ver uit elkaar dan ga je daar niet helemaal naar toe om te helpen. Als je in Spiegel en Carré hebt dan kunnen er ook net zo goed in de tussentijd net zoveel vragen hier komen. Ook al is het hier nu rustig.

Matt: String comparisson, als de eerste twee letters hetzelfde zijn, dan kan je wel uitwisselen

Jack: Machine learning op los laten [lacht]

Sam: [glimlacht] Ja

Moderator: We gaan door naar de volgende vraag. Hebben jullie frustraties gemerkt vanuit de studenten?

Susan: Dat het moeilijk leesbaar is op de beamer

Sam: Ja, dat vooral

Martin: Aan het begin hadden ze wat struggles want er waren wat dingen nieuw.

Matt: Moeten zij het op de beamer kunnen lezen?

Sam: ja ehm, het is wel handig

Jack: Mompelt ja

Sam: En ook op de beamer komt die pop-up van, [maakt met zijn handen een pop-up gebaar] "deze persoon is nu aan de beurt"

Matt: Ja, maar die is nu wel heel goed te lezen, volgens mij



Matt: Het enige is dat mensen nu “Help” invoeren, en dat klinkt een beetje van “Ja ik heb een vraag maar ik ben een beetje gefrustreerd, dus ik typ maar wat”, maar ik heb ...[stopt en geeft Sam het woord]

Sam: Ik heb wel gezien dat mensen aan het grappen waren over andere groepjes , “haha, zij zijn pas [wijzen naar het bord] bij week vier”

Martin: Dan wil niemand meer aftekenen [mompelend]

Moderator: Ja?

Susan: Dat is niet lief

Sam: Nee, ja, ik weet niet, het zal vast heel grappig bedoeld zijn.

Martin: Ja, misschien moet je dat dan alleen bij de TA view laten zien waar ze zijn

Susan: Ja

Matt: Eens

Jack: Wat je dan krijgt is dat je ineens mensen die uit het midden van de lijst worden weggehaald bijvoorbeeld en dan zit de rest van de studenten zo van “hé wat gebeurt daar nou?”

Moderator: Ja, dan is het minder transparant

Martin: Oja

Susan: Ja

Moderator: Het is natuurlijk als iemand zegt “Haha zij zijn pas bij week vier” dan heb je ook de mogelijkheid om als TA te zeggen “Hé joh, waarom zeg je dit? We kunnen gewoon normaal met elkaar omgaan.”

Martin: Maar dat hoor je niet altijd als TA

Matt: Dat vind ik niet, je bent hier wel met volwassenen.

Moderator: Maar het is toch ook niet een volwassen opmerking?

Martin: Ja, oke.

Matt: Nee, zeker niet, maar dan denk ik niet dat je als TA de aangesproken persoon bent om daar wat van te zeggen, eerlijk gezegd.

Moderator: Oke

Matt: Inderdaad als TA sta je boven de studenten, maar je staat er ook weer naast. Zo voel ik het in ieder geval.

Sam: Het was ook niet door de hele ruimte, het was toevallig dat ik daar in de buurt stond dat ik het hoorde. Dat ze het tegen elkaar zeiden.

Matt: Ik denk niet dat dit een gigantisch probleem wordt.

Sam: Neeeeeuh

Martin: If anything, waarschijnlijk gaan ze dan harder werken omdat ze dat niet leuk vinden

Sam: Nou.. [kijkt bedenkelijk]

Matt: [schud nee] denk het niet

Moderator: Of ze zetten het niet meer online. Maar het kan misschien ook wel mensen aansporen, maar dat weet ik niet. Ik heb het wel in de enquête nagevraagd. Andere frustraties nog van studenten?

Matt: weinig [schud nee]

Sam: [schud nee]

Martin: [schud nee]

Moderator: Even kijken. Gaan we door naar de volgende. Zouden studenten elkaars vraag moeten kunnen zien?

Matt: Dit kan twee kanten op. Of iedereen gaat dan "Help" zeggen, wat niemand is serieuze vragen aan het stellen. Of iedereen gaat serieuze vragen stellen. Ik denk wel dat het 1 van de twee kanten op gaat.

Martin: Want nu kunnen ze alleen de week zien dan?

Matt: nu kunnen ze alleen de naam zien en de opgave, volgens mij.

Jack: Ja die tags [wijst in de lucht als of hij de tags aanwijst]

Moderator: ja de tags die ze gekozen hebben.

Susan: Zou het niet zo zijn dat ze dan bang zijn om domme vragen te stellen?

Sam: Ja [knikt ja]

Susan: Als andere mensen ook hun vraag kunnen zien? Alsin domme vragen zijn er natuurlijk niet, maar... sommige kiddo's zijn er die hele slimme vragen stellen en sommige

die zeggen “ja, ik kom niet uit deze opdracht” en dan zouden andere mensen ze daarover uitlachen misschien.

Matt: Ik denk dat uitlachen geen ding is op de universiteit

Susan: ik ben er een beetje bang voor van wel

Sam: nou [kijkt bedenkelijk naar Matt]

Martin: Ja, [mompeld instemmend met Susan], soms wel

Sam: Sommige wel hoor.

Jack: Ja [lacht]

Matt: Maar meer vriendelijk uitlachen dan gemeen uitlachen.

Martin: Ja dat wel

Matt: Meer toelachen, dan uitlachen

Susan: True, maar in dit geval hebben we het over eerste jaars die net begonnen zijn, als dit bij derde jaars gebruikt zou worden is dat weer heel anders.

Jack: klopt

Martin: Als je dit in module acht gebruikt of module twee, dat is best een groot verschil

Matt: Ja

Moderator: Oke, dus jullie hebben daar gemixte gevoelens over. Zouden studenten de mogelijkheid moeten hebben hun eigen vraag aan te passen? Of zouden ze zelfs de vraag van een ander aan moeten kunnen passen?

Susan: [schud nee]

Martin: Nee, niet die van een ander

Sam: Nee, de vraag van een ander zou ik niet doen.

Jack: Dat gaat heel hard fout

Martin: Dan kunnen ze heel hard gaan trollen.

Susan: En dat gaan ze ook doen

Matt: Tenzij je erbij zet veranderd door

Susan: Nee, dan nog steeds

Matt: Nee dat helpt ook nog niet, dat is niet handig.

Jack: Eigen vraag wel

Martin: hmm [kijkt bedenkelijk]

Sam: Nee, dat is het zelfde. Volgens mij was er ook ooit, dat student ook vragen van andere studenten konden beantwoorden, maar dat is ook geen goed idee, want als je dan denkt van "Ja, ik snap dit" maar dan het eigenlijk niet snapt, dan gaat het helemaal verkeerd.

Jack: Oja.

Sam: en dat is met het aanpassen van een vraag ook zo, want je kan een vraag hebben die op zich een valide vraag is en dat iemand dan denkt "Dit is waarschijnlijk niet wat die bedoeld, hij bedoelt dit" [handgebaar]. Terwijl die wel bedoeld wat die heeft op geschreven

Jack: Maar ik heb het over je eigen vraag aanpassen.

Sam: Ja, maar ja.

Matt: Of nog heel even terug te komen op Sam [wijst naar Sam] het kan zijn dat je een suggestie doet en dat dan de student kan zeggen ja of nee. Over je eigen vraag aanpassen: Ja, want als je op een lange lijst staat en in de tussentijd ben je er iets meer ingedoken en denk je "O hier ben ik nog achter gekomen" maar je hebt nog steeds een vraag, dan kan je hem wel aanpassen.

Sam: JA

Jack: [knikt ja]

Martin: Of je hebt opeens zelfs een heel andere vraag zeg maar.

Matt: JA

Martin: Je gaat gewoon door, als je in de lijst staat dus

Matt: Nouja, je hebt natuurlijk wel getagt in een bepaalde categorie

Martin: Ja, oke

Matt: Dan zou je je categorie ook moeten kunnen aanpassen

Martin: Dan kan je gewoon in het begin jezelf alvast op de lijst zetten voor het geval je een vraag krijgt, maar kan natuurlijk ook

Matt: Dan krijg je weer het probleem met het aftekenen

Moderator: Als TA kan je die dan verwijderen. Want die heeft dan niks ingevoerd, dus die kan je uit de lijst gooien.

Matt: Dat is waar.

Sam: Ja

Moderator: Hoe kies je wie je gaat helpen?

Matt: De bovenste

Jack: Ja

Sam: Ja de bovenste ja

Susan: Tenzij je prioriteit geeft aan een bepaald iets. Zoals als je in week 6 moet gaan aftekenen dan ligt je prioriteit bij week 6 en niet bij mensen die nog bij week drie zijn.

Jack: Ja en bij sign off sessies eerst sign off, dan questions. En anders andersom.

Susan: Of bijvoorbeeld bij project sessies ga je niet sign off prioriteit geven, maar vragen over project.

Martin: ja. Maar ik heb wel gemerkt dat ik afgelopen week niet echt heel erg gelet heb op welke weken aan het aftekenen waren, meestal pakte ik gewoon de bovenste

Matt: Ja ik ook

Martin: Nou moet ik zeggen dat het in onze sessies ook niet erg druk was, dus het maakte niet zoveel uit. Ik ben gewoon gewend om de bovenste aan te klikken.

Matt: Bij ons was het gewoon week 4 of week 5 dus dan is het ook een beetje om het even.

Susan: Ja

Sam: Als het niet zo druk is en ik zie dan iemand van week 3 er nog staan die nog veel moet aftekenen en die er bij gebaat is dat die eerder aan de beurt is, maar als die lijst zo [houd vingers ongeveer 7 cm uit elkaar] dat ik denk van die komt toch wel aan de beurt voor het eind van de sessie, dan maakt het voor mij niet uit dat ik nou begin met die week 3 of dat ik gewoon bovenaan ga.

Matt: Zeker als je de groep TA bent dan weet je ongeveer hoe lang aftekenen bij iedereen duurt, dus dan kan je daar ook, "oke nu heb ik veel tijd en kan ik [wijst] die persoon helpen."

En “nu moet ik er even snel vijf man er doorheen raggen, dan die die die en die” als je echt een lange lijst hebt.

Martin: Ja [kijkt niet helemaal overtuigd], in mijn groep is het echt heel goed te doen, ik ken iedereen en iedereen werkt best wel goed, dus ja het maakt allemaal niet zoveel uit.

Matt: Ja \_\_\_ zijn natuurlijk een geval apart

Martin: En het zijn er minder, dus dan heb je toch altijd genoeg tijd.

Moderator: Heeft 1 van jullie gehad dat die twee studenten tegelijkertijd naar voren kon roepen?

Allen: Nee

Jack: Hoe werkt dat dan eigenlijk? Heb je een soort van knopje dat je studenten naar voren kan roepen?

Moderator: Ja, wat er gebeurt is dat de studenten stellen dezelfde vraag, dus 1 of meer hebben een vraag van een ander gesteld. Als jij de eerste bovenaan zegt van “ik wil deze helpen” en er tien daaronder nog iemand staat met exact dezelfde vraag dan krijg jij als TA een pop-up met “er is nog iemand met dezelfde vraag in deze lijst, wil je deze tegelijk helpen?” of je kiest ervoor om de student individueel te helpen.

Jack: O, oke

Moderator: Dan kan je kiezen en dan bij het naar voren roepen moet je wel ruimte hebben in je zaal en dan kan je ze tegelijkertijd helpen.

Matt: Wat misschien handig is, is om de naam van die persoon erbij te zetten, want vaak weet je als die naast elkaar zitten dan kan je wel naar ze toe lopen.

Moderator: O ja

Martin: Nu krijg je alleen het groepsnummer?

Sam: nee, je krijgt nu alleen te zien er zijn nog twee andere die deze vraag hebben.

Martin: Dat is wel heel chill

Moderator: Ja dat is een goede

Matt: dan kan je zelfs aanklikken wie wel en wie niet [glimlacht]

Sam: [lacht]

Susan: [lacht] ah gemeen

Moderator: [lacht]

Jack: [lacht]

Martin: Hele zaal dezelfde vraag [maakt gebaar naar zichzelf toe] kom maar jongens [lacht]

Jack: [lacht]

Susan: [lacht]

Jack: Dan krijgen we een lecture

Iedereen: [lacht]

Moderator: Als we kijken naar de sign off list, wat voor een features zou die moeten hebben? Nu kon je maar 1 week tegelijkertijd afvinken als student. Je zou kunnen zeggen als van "nou, ik moet week 1 t/m 5 aftekenen". Wat zouden jullie daarvan willen? Wat is handig voor jullie? Laten we beginnen met: zou je willen dat studenten meerdere weken als 1 entry kunnen aangeven?

Susan: Ik denk dat dat wel toegevoegde waarde heeft

Sam: Ja, ik denk ook dat dat wel handig is. Misschien niet tot op het vraag niveau, maar wel inderdaad "ik heb week 3 en 4 die ik wil doen."

Susan: Dan kan je gewoon de tijd ervoor nemen en anders zeggen "O ik wacht even"

Sam: Ja dan zie je een kleine indicatie van hoeveel het is. Het kan natuurlijk het eind van 1 vraag van de vorige week en 1 van de volgende week zijn.

Martin: Dan weet je in ieder geval waar je rekening mee moet houden.

Matt: Je kan ook per afteken blok

Moderator: We hadden ook met de vorige focus groep besproken over dat je dus wel aan moest geven welke vragen je af wilde tekenen.

Martin: Dan wordt het wel heel veel

Moderator: ja dan kan het wel heel veel worden, maar dan kan je ook zien als iemand nog maar 1 dingetje moet aftekenen.

Sam: Ja

Matt: Je kan ook hem ook koppelen aan de excel sheet en dan wordt je dus gekoppeld aan je account en dan kan je dus zien wat je nog moet aftekenen en dan weet je dus wat je nog moet aftekenen

Jack: Dat is een heel design project apart volgens mij.

Iedereen: [lacht]

Moderator: Wel gaaf

Matt: Ja [haalt zijn handen ervan af] het is een idee

Jack: Ja

Matt: Ik gooi gewoon ideeën omhoog vandaag

Moderator: Ja dat is goed. Ik had er ook aan gedacht. Stel nou je wil week 3t/m5 aan vinkt stel ik ben een student en jullie hebben gezegd we gaan alleen week vijf aftekenen deze week. Ja hoe moet het systeem er dan mee om gaan?

Jack: Ja dan kan je op dat moment wel naar die student gaan en daar zeg je "Hé ik wil wel week 5 voor je aftekenen"

Matt: dat is niet iets wat het systeem hoeft af te vangen denk ik

Martin: Nee

Sam: Nee

Jack: Nee

Sam: Nee dan wordt het weer een beetje te ingewikkeld.

Susan: het zijn vooral te menselijke inschattingen. Stel je doet dat en er is niemand anders dus zeeën van tijd om iemand af te tekenen, waarom zou je het dan niet doen.

Sam: Ja

Jack: Maar integratie met iets, dat TA-help.me koppelt aan de sign off zou wel heel nuttig zijn.

Martin: Of je kan doen hoeveel je wil aftekenen en daar dan een cijfertje bij kan zetten

Matt: Nee, want vragen verschillen heel erg hoor.

Martin: Ja oke



Susan: Je zou ook kunnen zeggen dat ze kunnen aangeven “O ik wil deze week helemaal aftekenen of gedeeltelijk”

Matt: Als we dat gaan doen kan je net zo goed per blok aangeven

Sam: Het is vrijwel altijd gedeeltelijk.

Susan: Ja oke dat is ook waar

Martin: Dan weet je nog niks

Sam: Ja precies

Susan: Ja dan krijg je ook de situatie dat iemand al de halve week heeft afgetekend en het tweede deel moet aftekenen, is dat dan gedeeltelijk of de hele week

Matt: gedeeltelijk

Susan: Ik weet zeker dat dan heel veel mensen de hele week gaan aanklikken

Moderator: Dat leidt wel mooi tot de volgende vraag: Is het beter om ze te forceren om in delen af te tekenen?

Jack: Ik zou zeggen van wel

Matt: Ik zou zeggen van niet

Martin: Hoe bedoel je, dat je bij hun komt en dan “ja ik kan nu alleen deze aftekenen” en dan ga je weer weg?

Moderator: Nee ik bedoel

Matt: Dat ze per blok gaan aftekenen

Moderator: Ja, dat ze het dan ook per blok erin moet zetten

Matt: Dat kost veel meer tijd

Moderator: zodat je ook, stel dus dat je zegt je mag je alleen per blok in de lijst zetten, dan ga je dus eerder in de lijst als je dat af hebt, omdat je anders op het einde drie keer op die dingen moet klikken voor je alles in de lijst hebt staan

Susan: Ik denk dat dat stel er is al een lange lijst en iemand denkt oke ik heb nu dit blok af en zet zichzelf in de lijst, maar tegen de tijd dat die aan de beurt is heeft die het volgende blok ook af, dat het heel demotiverend werk

Matt: Dan kan die hem gewoon edditten toch en toevoegen?

Sam: Ja en dus

Susan: Maar dat kon toch nog niet?

Martin: Dat was dus juist de vraag, dat je dat forceert.

Sam: Ja en in rustige sessies heeft het toch geen zin, dan heb je juist de tijd om veel blokken achter mekaar af te tekenen.

Matt: Ik moet zeggen als er mensen zijn die een hele week willen aftekenen, zeker als ze achter lopen dan denk ik "doe dat dan per halve week" dan kan je nog zien dat ze progress maken.

Jack: Ja

Matt: Ik vind per blok wel fijn eigenlijk

Jack: Ja het was meer, want soms heb je echt hele rustige sessies, dan zijn mensen wel klaar met de blokken maar dan doen ze nog niet aftekenen

Susan: Ja

Jack: en dan gaan mensen allemaal tegelijk op het laatste moment de hele week aftekenen

Matt: Vrijdag middag kwart over vijf

Martin: [glimlacht]

Susan: [lacht]

Jack: dan denk ik van "o we zijn klaar" en dan heb je ook nog die andere groepjes die hetzelfde denken

Moderator: Wat we met de vorige group hadden besproken was dat zij de optie zouden willen om een lijst voor het einde van de les te sluiten.

Sam: Ja vind ik een heel goed idee

Martin: Vanaf nu doen we geen sign offs meer of zoiets?

Matt: Bestaat er niet al zoiets? [kijkt Sam aan]

Sam: nee je kan geen aparte lijsten sluiten

Moderator: nee, je kan je room helemaal sluiten en dan is het ook klaar, maar je kan niet zeggen geen entries meer voor deze lijst

Matt: In welk scenario zou je dit willen?

Sam: Aan het eind van de sessie, als jij ziet dat er drie mensen op de lijst van aftekenen staan en je hebt tijd om er drie af te tekenen en niet meer, dan kan je de lijst dicht doen

Matt: Oh, vergrendelen meer

Moderator: Ja

Jack: [knikt ja]

Matt: Oh vergrendelen is op zich wel [kijkt tevreden] daar ben ik wel bij

Jack: Goed idee van de vorige groep

Martin: Ja dan kan je net zo goed alle lijsten vergrendelen toch?

Susan: Mjaaa [kijkt twijfelachtig]

Sam: questions wil je dan waarschijnlijk nog open hebben

Martin: Maar als jij als enige TA daar zit

Moderator: Dan wel, maar als je met meerdere TAs bent kan je besluiten om niet meer sign offs aan te nemen en wel nog vragen

Martin: Op zich is het wel een goede feature

Moderator: Ja, ik vond het wel een goed idee, maar ik wilde weten hoe jullie er tegenaan keken.

Jack: Ja en dan heb je ook alleen nog maar mensen die zitten voor sign off, als de lijst dicht is kunnen ze ook gaan.

Martin: ja, doe [lacht]

Jack: Mooi geweest

Moderator: Er waren dus nu categorieën, die ik had gemaakt, eerst kozen ze een week en onder die week een opdracht en dan waren er nog subcategorieën. Het volgende onderwerp waar we het over gaan hebben is, hoe specifiek zou dat moeten zijn? Was dit fijn? Of denk je.

Matt: Ik vond het erg specifiek. Ik heb niet echt naar welke categorie er stond gekeken maar juist naar de vraag die er stond, want vaak was de vraag die de student stelde dan wist je al "oh, dit gaat over die opgave"

Jack: Ja

Matt: En het was, er waren drie verschillende kleurtjes en dan moest je kijken, wat staat daar, wat staat hier wat staat daar [ wijst in de lucht drie categorieën aan] Ik had vaak genoeg aan de vragen van de student.

Jack: Ja

Sam: Ik zou ook die laatste diepte categorieën zeg maar in een vraag nog meer categorieën had, zeg maar, die zou ik weg laten. Dus wel het vraag nummer maar niet die categorie

Martin: En ik merkte van mezelf wel dat ik het vaak gewoon oversloeg, ze gewoon aanklikte en gaan

Susan: [lacht en glimlacht]

Martin: Dan zag je de vraag nog wel die was wel opvallen, maar er stonden wat kleuren om de categorieën waardoor je ze niet goed kon zien. Vaak stond er ook gewoon "please help" dan maakte ik er een grapje over "hier is de help"

Jack: [lacht]

Matt: Wat ik vaak als het wat rustiger is en ik heb net iemand geholpen en ik kijk van achterin de zaal naar het bord, en ik zie iemand op het bord staan en ik ken die naam dan loop ik er in 1 keer naartoe. En dan is \_\_\_ weer gefrustreerd want die klikt ze dan aan en dan blijf ik al te helpen.

Martin: oja dat doe ik ook heel vaak

Matt: Want dan hoef ik niet eerst langs mijn laptop te lopen

Martin: Ik vraag wel eens mensen van "kan je jezelf van de lijst halen?"

Jack: Ja

Matt: Ja, maar soms doe ik dat ook niet.

Martin: Ja, en dan heb je natuurlijk ook niet gelezen wat voor een vraag er stond.

Matt: nee, dan is het wel weer fijn als het op de beamer staat

Martin: En ook groot [lacht]

Iedereen: [lacht]

Martin: meestal zijn ze ook wel goed genoeg in het uitleggen van hun vraag

Moderator: oke. Het idee was dus in eerste instantie met die edit dat de student assistenten dan de mensen die ze het laatst hebben geholpen de vraag van kunnen aanpassen, zodat alleen goede vragen in de lijst blijven en slechte vragen gevuld worden. We hebben al gezien dat dat niet gebeurt, wat niet erg is. De vraag is dus: Wie zou er verantwoordelijk moeten zijn voor het checken of erin moeten blijven staan of niet?

Martin: Wat je dus nu hebt is dat je alleen maar de vragen kan bewerken die bovenin de lijst staan. Als er te veel vragen zijn geweest kan je ze überhaupt niet meer bewerken, want je hebt ook geen lijst van dit waren de vragen.

Matt: Nee, dat klopt maar daar heb je een hele makkelijke oplossing voor. Namelijk, dat je op je eigen scherm op je eigen account alleen de laatste mensen ziet die jij hebt geholpen ziet. Dan kan je bijvoorbeeld als je met drie student assistenten bent en er komt een hele moeilijke vraag, ondertussen zijn er al zes vragen beantwoord door de andere twee, dan staat hij dus niet meer op de beamer, maar nog wel op je eigen account. En dan kan je hem op je eigen scherm dus gewoon aanpassen.

Martin: Dat doet die plug-in van Remco, dat je je laatste vraag daar nog hebt staan

Jack: O dat is een plug-in

Matt: Ik heb die nog niet gezien

Martin: Maar in ieder geval als je zelf al meerdere vragen hebt beantwoord en daarna de tijd hebt om de vragen te beoordelen, daarna kan je ze niet meer zien

Matt: Ja, of je zou zeggen je neemt aan het eind van de sessie even vijf minuten de tijd om de vragen na te lopen. Maar dat is misschien ook weer ben je de helft vergeten.

Sam: Ja

Jack: En dan is dus het hele punt dus weg want dan heeft iedereen zijn vragen al gesteld.

Matt: Nou voor de volgende sessie

Moderator: Ja hat kan een sheet zijn voor een volgende sessie of het jaar daarna. Puur een database

Martin: Ja, maar dan moet je wel een overzicht van alle vragen kunnen zien en dat kan dus op dit moment niet.

Moderator: ja. Maar de vraag is dus vooral wie is er verantwoordelijk hiervoor? Is dat de docent? Zijn jullie dat?

Matt: Ik denk dat de docent hier de beste optie voor zijn, maar dat kan gewoon niet?

Jack: Nee, die heeft geen tijd

Sam: Nee

Martin: Nee

Matt: Dus geen tijd en het kost gewoon veel te veel. Student assistenten kan, maar ik weet niet hoe effectief dat is.

Sam: Ja, ik vraag me ook af hoeveel tijd die in de sessie hebben überhaupt in sommige sessie hebben om de vragen nog te gaan beoordelen.

Matt: Aan de andere kant als jij na de sessie het ergens thuis doet.

Martin: Maar hoeveel dat oplevert denk ik dan

Sam: Ja en ik vraag me af hoeveel SA's er naast hun sessie ook nog weer eens naar hun eigen vragen gaan kijken

Matt: Nou ja je kan er toch uren voor schrijven

Susan: [grinikt]

Jack: [glimlacht]

Martin: [glimlacht]

Sam: Dat zou ik niet elke sessie gaan doen

Martin: Nee

Jack: Nee

Moderator: Dat is ook wel een goede vraag. Moet het elke sessie of moet het alleen aan het begin of einde van de course, of van de week?

Martin: Ja je zou iemand een TA kunnen aannemen die per week uitzoekt welke vragen er zijn gesteld en er een selectie uit haalt. Daar kan je wel heel specifiek een TA voor maken. En dat is dan meer voor het volgende jaar zeg maar.

Matt: Ja daar ben ik het mee eens

Sam: Ja dat kan je wel doen. Ik denk ook als je ze dat in een sessie laat doen dan heb je in de ene sessie een vraag toegevoegd en de volgende komt dezelfde vraag maar dan anders verwoord, dan denk je misschien "ja dit is wel een goede vraag" maar dan zet je hem twee keer in de lijst.

Martin: Dan moet je dus iemand hebben die over alle vragen heen gaat

Matt: En dit is dus in principe hetzelfde wat we vorig jaar deden met \_\_\_ in de TA meeting, van “ok dit zijn de vragen van volgende week, dit zijn de tricky vragen” als je dan de vragen van de studenten erbij houdt van de afgelopen twee jaar dan weet je gelijk wat er gaat spelen en welke vragen je moet voorbereiden.

Martin: Dat is zeker waar

Sam: Ja

Susan: Ja, ik denk dat dat heel nuttig is, misschien nog wel meer voor ons dan voor de studenten

Matt: De vraag is natuurlijk ook hoe erg de opgaven gaan veranderen over de jaren

Jack: Ik denk niet teveel

Sam: Over de afgelopen paar jaar zijn die opdrachten niet echt veranderd

Matt: Nee, ok, dan is het wel nuttig

Moderator: Ok, duidelijk, dus een TA die dat eens in de week checkt. Dan is de volgende vraag wie is er dan verantwoordelijk voor de categorieën lijst?

Sam: Dat zou ik wel bij de docent neerleggen. Aan het begin van de module en dan ben je er klaar mee

Matt: Categorieën?

Sam: Ja

Moderator: Ja, die heb ik nu gemaakt voor jullie. Dat zijn die tags, dat je week had opgave en begrip

Matt: O die

Moderator: Dus dan ga je de hele manual door, kijk je bij elke opgave wat hoort hier nu bij?

Susan: klinkt wel als een docent ding

Matt: Ja, of 1 student assistent

Sam: Ja

Matt: Het is precies hetzelfde als het maken van de

Martin: sign off sheets

Matt: ja, dit kan je gewoon een student assistent laten doen

Sam: gewoon combineren! Als je die sign off sheet aan het maken bent, oke, maak dan gelijk ook een categorieënlijst

Martin: Ja, als je er toch door heen gaat

Moderator: Ja, ok. Als je nu als student assistent kijkt naar de lijst wie er vragen heeft of afgetekend wil worden, zou je ook willen zien hoe lang een student al aan het wachten is?

Sam: [kijkt bedenkelijk]

Susan: Nee, dat is alleen maar heel iets waarover ze gaan zeuren als het een hele chaotische sessie is. Dat heeft dus weinig toegevoegde waarde.

Moderator: Ik bedoelde dat dat alleen zichtbaar is voor de TAs

Matt: Nee, het is zeg maar, het feit dat iemand bovenaan de lijst staat is al een indicatie dat iemand langer aan het wachten is, dan degene daaronder.

Sam: Ja

Matt: Of diegene nou vijf minuten of tien minuten of drie seconden langer aan het wachten is dat maakt mij niet zoveel uit.

Martin: nee

Jack: ik zie er geen toegevoegde waarde in

Moderator: Ok. We zijn bij het punt waar we het over het design kunnen hebben. Ik heb niet heel erg specifieke vragen. Je mag gewoon roasten en alles zeggen.

Matt: nou daar gaan we [slaat op zijn knie met een glimlacht]

Iedereen: [lacht]

Moderator: gooi alles eruit ja

Matt: Nou wat ik had met de originele TA-help.me was dat het er gewoon heel strak uitzag omdat het gewoon in een keer gebouwd was. Nu heb je een aantal dingen toegevoegd, de kleurtjes en het dark theme en meer.

Sam: het past net niet helemaal bij elkaar

Matt: nee het past niet bij elkaar, maar dat is in principe niet heel moeilijk om te veranderen want je moet alleen de layout een keer op nieuw structureren en de functionaliteit kan gewoon hetzelfde blijven.



Susan: er kan ook wel gekeken worden naar het lettertype, qua leesbaarheid

Martin: ik de tags ook niet heel erg leesbaar, die kleurtjes  
Die door elkaar gingen

Sam: ja die gradients en die witte tekst die er soms net niet leesbaar tussenin viel

Jack: ja ik denk niet echt dat de gradients iets toevoegen

Sam: Ja ik denk meer aan 1 kleurtje per vakje

Martin: Ja 1 kleur per week ofzo, dat lijkt mij handiger dan kan je ook onthouden welke  
kleur waarbij hoort.

Matt: bijvoorbeeld door de weken van rood naar groen, of andersom

Martin: Of de current week is groen en hoe verder je daarvan af zit hoe roder het wordt

Sam: ja precies

Moderator: maar wil je dan dat alles van week 7 bijvoorbeeld rood is en alles van week vier  
oranje? Of zou je wel willen dat week 7 opgave 1 is een andere tint dan opgave 2

Martin: nee, nee, de rest is gewoon allemaal de kleur van de week

Sam: ja en dan zou ik de hogere weken een groenere kleur geven, dat betekent dat ze on  
track zijn zeg maar

Moderator: oh op die manier, dus de actuele week groen

Martin: en dan twee weken geleden bijvoorbeeld rood

Jack: positieve feedback

Moderator: maar dat is ook niet aardig hè? Want dan durven dat echt niet meer erop te  
zetten. Je kan ook paars of iets anders kiezen

Matt: maar het is dan wel handig om er een gradient in zit maar dan door de weken heen.  
Bijvoorbeeld 1 kleur, maar dan wel dat ze door de weken heen veranderen

Martin: daar kan je heel veel leuke dingen mee doen

Moderator: De actuele week groen, dat is wel logisch.

Sam: in module 1 hebben we al die kleuren, elke kleur heeft zijn instructeur

Matt: oh ik dacht dat je dit bedoelde dat het in TA-help.me al zo was

Sam: nee

Martin: nee

Moderator: We hadden bedacht dat je een theme change kon doen van light theme naar dark theme, maar die was nog niet functioneel voor de pilot. Het was het idee dat je die dan kon aan zetten voor de beamer view, zou je dat fijn vinden?

Jack: ja gewoon doen

Sam: voor de beamer is light denk ik wel chill.

Martin: de beamer zou in inderdaad gewoon licht laten, maar voor mijn eigen scherm vind ik dark wel chill [glimlacht]

Jack: [glimlacht]

Sam: Ja dat is waar, persoonlijke preference, meer keuze is meer beter, laat mensen gewoon kiezen wat ze willen gebruiken

Susan: ik vond het wel fijn van de vorige view het was zo overzichtelijk, je had gewoon een rood en een groen knopje en een blauwe balk bovenin en de rest was wit

Sam: maar dat kan ik dark-theme gewoon ook [glimlacht] rood en groen knopje, zwarte achtergrond, tekst en een blauwe balk

Sam: en in plaats van de hele tag een kleur te geven alleen het randje

Martin: ja misschien helpt dat wel

Susan: oja

Sam: dat leid misschien minder af

Moderator: ja misschien, dat zou ook wel mooi zijn. Ok. Nog andere dingen? ....

Matt: [schud nee]

Moderator: Nee? Oke. Nog vragen aan mij?

Susan: gaan jullie dit echt echt helemaal door ontwikkelen zodat we dit volgend jaar als echt systeem kunnen gebruiken?

Moderator: dat is wel het plan ja. Ik wil nog wel de veranderingen door gaan voeren.

Moderator: ik moet nog wat dingen zeggen. Ik wil graag jullie r

Susan  
Matt  
Sam  
Martin  
Jack

## Appendix V

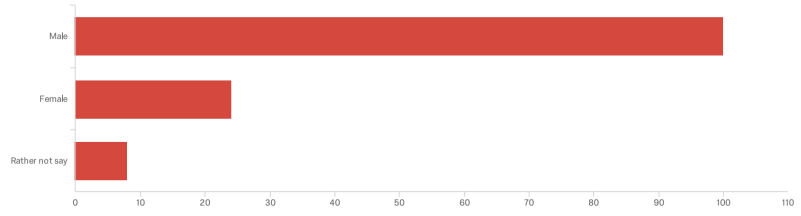
# Results of the Questionnaires

## V.1 Student results

# Default Report

TA-help.me Student questionnaire  
January 15, 2019 8:08 AM MST

## Q1 - What is your gender?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	What is your gender?	1.00	3.00	1.30	0.58	0.33	132

#	Field	Choice Count
1	Male	75.76% 100
2	Female	18.18% 24
3	Rather not say	6.06% 8
		132

Showing rows 1 - 4 of 4

Q1 - What study are you attending?

..TCS  
..TCS  
..TCS  
..TCS  
..TCS  
..BIT  
..TCS  
..TCS  
..TCS  
..TCS  
..TCS  
..TCS  
..BIT  
..TCS  
..TCS  
..TCS  
..BIT  
..BIT  
..BIT  
..BIT  
..BIT  
..TCS  
..TCS



What study are you attending?

TCS

TCS

TCS

TCS

BSc. TCS

BIT

TCS

TCS

TCS

TCS

Tcs

BIT

CS

TCS

TCS

BIT

Business & IT

bit

Bit

Business & IT

CS

computer science





..BIT  
 ..BIT  
 ..TCS  
 ..TCS  
 ..ME  
 ..TN  
 ..BIT  
 ..TCS  
 ..BIT  
 ..IBA  
 ..TCS  
 ..TCS  
 ..BIT  
 ..TCS  
 ..TCS  
 ..BIT  
 ..Premaster  
 ..TCS  
 ..TCS  
 ..TCS  
 ..TCS  
 ..ME  
 ..TCS  
 ..BIT

What study are you attending?

Business&IT

BIT

TCS

TCS

Mechanical Engineering

Technische Naturkunde

BIT

TCS

BIT

International Business Administration

TCS

computer science

Bit

TCS

TCS

BIT

Pre master

TCS

tcs

TCS

TCS

Wb

CS

BIT



..BIT  
 ..TCS  
 ..BIT  
 ..TCS  
 ..TCS  
 ..TCS  
 ..TCS  
 ..TCS  
 ..TCS  
 ..TW  
 ..TCS  
 ..ST  
 ..BIT  
 ..TCS  
 ..TCS  
 ..TCS  
 ..Premaster  
 ..BIT  
 ..TCS  
 ..AT  
 ..TCS  
 ..Premaster  
 ..TCS  
 ..TCS  
 ..BIT  
 ..TCS  
 ..TCS

What study are you attending?

- BIT
- TCS
- BIT
- TCS
- Technical Computer Science
- TCS
- Computer Science
- TCS
- Applied Mathematics
- CS
- ST
- BIT
- TCS
- TCS
- CS
- Premaster BIT
- TCS
- Advanced Technology
- TCS
- Premaster CS
- TCS
- Bit
- TCS
- Technical computer science

..TCS  
 ..TCS  
 ..Minor  
 ..TCS  
 ..BIT  
 ..TCS  
 ..TCS  
 ..TCS  
 ..BIT  
 ..BIT  
 ..BIT  
 ..BIT  
 ..BIT  
 ..BIT  
 ..TCS  
 ..Minor  
 ..BIT  
 ..ME

What study are you attending?

Software Systems - Computer Science

TCS

IEM, minor CS

BIT

TCS

TCS

TCS

BIT

BIT

BIT

BIT

Computer Science (Minor)

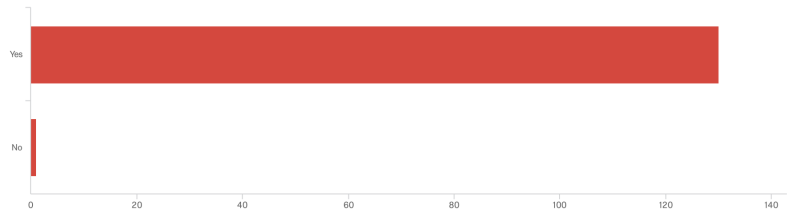
Business & IT

Mechanical Engineering

### Q3 - How old are you?

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Age:	16.00	28.00	19.40	1.75	3.06	132

Q4 - Have you used the TA-help.me site before this week?






#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Have you used the TA-help.me site before this week?	1.00	2.00	1.01	0.09	0.01	131

#	Field	Choice	Count
1	Yes	99.24%	130
2	No	0.76%	1

131

Showing rows 1 - 3 of 3

Q4\_yes - Do you agree or disagree with the following statements?

- Neutral 
- Neutral 
- Neutral 
- Disagree 
- Agree 

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	I like the previous version better than the new version	1,00	5,00	2,76	1,31	1,72	111
2	I have the feeling that I am being helped quicker than with the previous version	1,00	5,00	3,44	1,08	1,17	111
3	I liked the categories that help me define what type of question I have	1,00	5,00	2,85	1,40	1,95	111
4	The signoff categories were not useful	1,00	5,00	3,48	1,19	1,42	111
5	I have the feeling I am being helped quicker with the web site in comparison to tutorials that do not use TA-help.me	1,00	5,00	2,25	0,98	0,96	111

#	Field	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree	Total
1	I like the previous version better than the new version	19,82% 22	29,73% 33	17,12% 19	21,62% 24	11,71% 13	111
2	I have the feeling that I am being helped quicker than with the previous version	3,60% 4	11,71% 13	45,05% 50	16,22% 18	23,42% 26	111
3	I liked the categories that help me define what type of question I have	17,12% 19	36,04% 40	10,81% 12	17,12% 19	18,92% 21	111
4	The signoff categories were not useful	8,11% 9	12,61% 14	24,32% 27	33,33% 37	21,62% 24	111
5	I have the feeling I am being helped quicker with the web site in comparison to tutorials that do not use TA-help.me	27,93% 31	27,93% 31	36,94% 41	5,41% 6	1,80% 2	111

Showing rows 1 - 5 of 5

Q4\_no - Do you agree or disagree with the following statements?



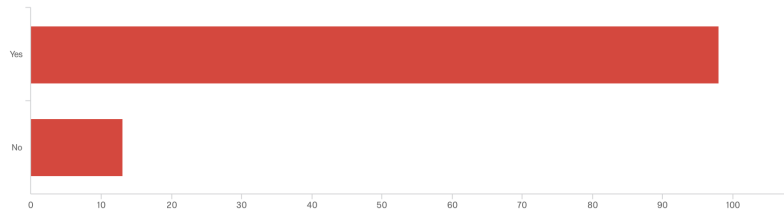
#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	I liked the categories that help me define what type of question I have	2.00	2.00	2.00	0.00	0.00	1
2	The signoff categories where not useful	4.00	4.00	4.00	0.00	0.00	1
3	I have the feeling I am being helped quicker with the web site in comparison to tutorials that do not use TA-help.me	2.00	2.00	2.00	0.00	0.00	1

#	Field	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree	Total
1	I liked the categories that help me define what type of question I have	0,00% 0	100,00% 1	0,00% 0	0,00% 0	0,00% 0	1
2	The signoff categories where not useful	0,00% 0	0,00% 0	0,00% 0	100,00% 1	0,00% 0	1
3	I have the feeling I am being helped quicker with the web site in comparison to tutorials that do not use TA-help.me	0,00% 0	100,00% 1	0,00% 0	0,00% 0	0,00% 0	1

Showing rows 1 - 3 of 3



Q5 - Did you ask a question via TA-help.me?



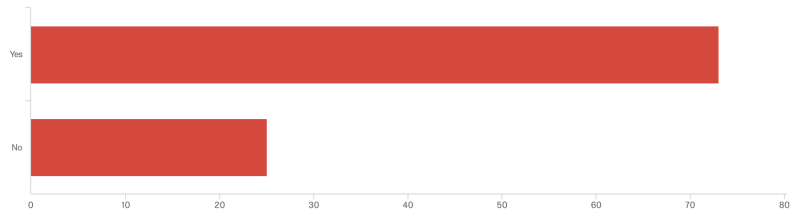
#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Did you ask a question via TA-help.me?	1.00	2.00	1.12	0.32	0.10	111

#	Field	Choice Count
1	Yes	88.29% 98
2	No	11.71% 13

111

Showing rows 1 - 3 of 3

Q6 - Did you write you own question?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Did you write you own question?	1.00	2.00	1.26	0.44	0.19	98

#	Field	Choice Count
1	Yes	74.49% 73
2	No	25.51% 25
		98

Showing rows 1 - 3 of 3



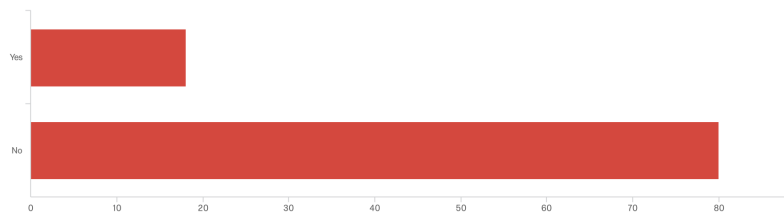
### Q7 - I found it hard to formulate my question

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	I found it hard to formulate my question	1.00	5.00	3.07	1.39	1.93	73

#	Field	Choice Count
1	Strongly agree	16.44% 12
2	Somewhat agree	23.29% 17
3	Neither agree nor disagree	17.81% 13
4	Somewhat disagree	21.92% 16
5	Strongly disagree	20.55% 15
		73

Showing rows 1 - 6 of 6

Q8 - Did you pick a question someone else wrote?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Did you pick a question someone else wrote?	1.00	2.00	1.82	0.39	0.15	98

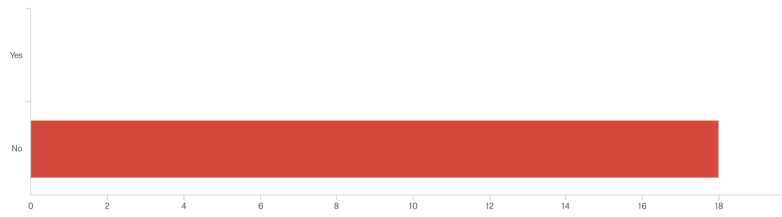
#	Field	Choice Count
1	Yes	18.37% 18
2	No	81.63% 80

98

Showing rows 1 - 3 of 3

Q9 - Did the TA ask you to come to the front of the room, to be helped with other students

who had the same question?



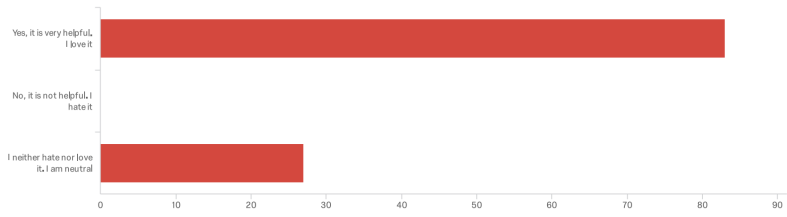
#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Did the TA ask you to come to the front of the room, to be helped with other students who had the same question?	2.00	2.00	2.00	0.00	0.00	18

#	Field	Choice Count
1	Yes	0.00% 0
2	No	100.00% 18

18

Showing rows 1 - 3 of 3

Q10 - Do you think TA-help.me is a helpful learning tool in this course?

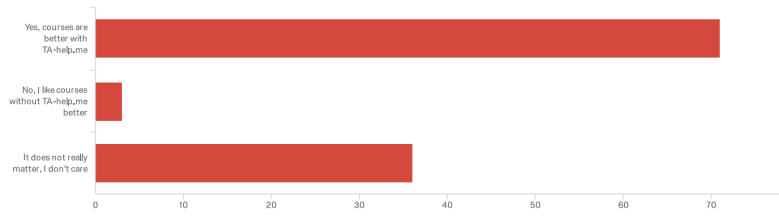


#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Do you think TA-help.me is a helpful learning tool in this course?	1.00	3.00	1.49	0.86	0.74	110

#	Field	Choice Count
1	Yes, it is very helpful. I love it	75.45% 83
2	No, it is not helpful. I hate it	0.00% 0
3	I neither hate nor love it. I am neutral	24.55% 27
		110

Showing rows 1 - 4 of 4

Q11 - Do you prefer courses that use TA-help.me over courses that don't use it?









#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Do you prefer courses that use TA-help.me over courses that don't use it?	1.00	3.00	1.68	0.93	0.87	110

#	Field	Choice Count
1	Yes, courses are better with TA-help.me	64.55% 71
2	No, I like courses without TA-help.me better	2.73% 3
3	It does not really matter, I don't care	32.73% 36
		110

Showing rows 1 - 4 of 4

Q12 - Do you agree or disagree with the following statements?

- Neutral 
- Agree 
- Neutral 
- Neutral 
- Agree 
- Disagree 

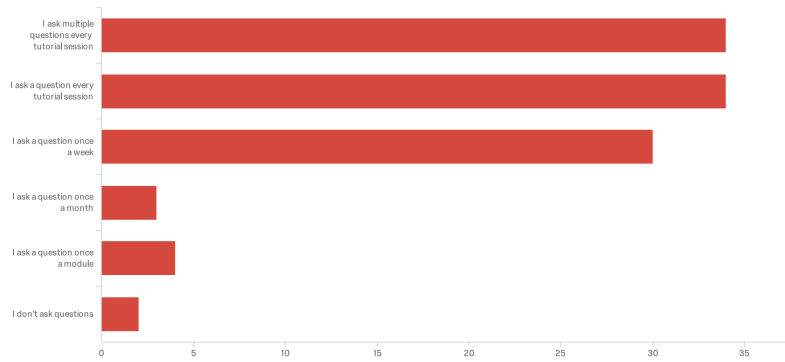
#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	By writing out question I think more critically about what I want to ask	1.00	5.00	3.20	1.21	1.46	108
2	The system seems fair to me	1.00	5.00	2.11	0.96	0.91	108
3	It is unfair when the TA helps someone below me first	1.00	5.00	2.46	1.17	1.36	108
4	That my question is showed anonymously is important to me	1.00	5.00	3.31	1.17	1.36	108
5	I had the feeling that I could ask anything	1.00	5.00	2.31	1.00	0.99	108
6	I asked less questions that I normally do	1.00	5.00	3.78	1.07	1.15	108

#	Field	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree	Total
1	By writing out question I think more critically about what I want to ask	3.70% 4	32.41% 35	25.00% 27	17.59% 19	21.30% 23	108
2	The system seems fair to me	28.70% 31	41.67% 45	21.30% 23	6.48% 7	1.85% 2	108
3	It is unfair when the TA helps someone below me first	25.00% 27	28.70% 31	26.85% 29	13.89% 15	5.56% 6	108
4	That my question is showed anonymously is important to me	7.41% 8	16.67% 18	31.48% 34	25.93% 28	18.52% 20	108
5	I had the feeling that I could ask anything	22.22% 24	37.96% 41	28.70% 31	8.33% 9	2.78% 3	108
6	I asked less questions that I normally do	2.78% 3	6.48% 7	35.19% 38	21.30% 23	34.26% 37	108

Showing rows 1 - 6 of 6



Q13 - How often do you ask a question via TA-help.me?



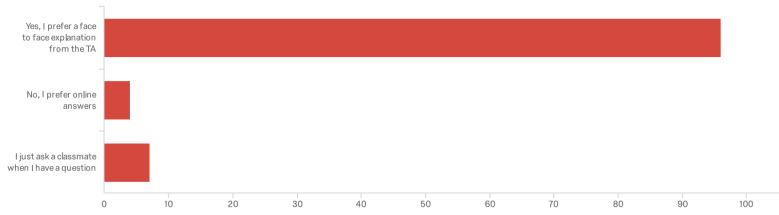
#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	How often do you ask a question via TA-help.me?	1.00	6.00	2.21	1.14	1.30	107

#	Field	Choice Count
1	I ask multiple questions every tutorial session	31.78% 34
2	I ask a question every tutorial session	31.78% 34
3	I ask a question once a week	28.04% 30
4	I ask a question once a month	2.80% 3
5	I ask a question once a module	3.74% 4
6	I don't ask questions	1.87% 2

107

Showing rows 1 - 7 of 7

Q14 - When you have a question, do you prefer to get a face to face explanation from the TA or not?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	When you have a question, do you prefer to get a face to face explanation from the TA or not?	1,00	3,00	1,17	0,52	0,27	107

#	Field	Choice Count
1	Yes, I prefer a face to face explanation from the TA	89,72% 96
2	No, I prefer online answers	3,74% 4
3	I just ask a classmate when I have a question	6,54% 7
		107

Showing rows 1 - 4 of 4

Q15\_1 - If you had to give this site a grade what would it be?

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Grade	1.00	5.00	3.84	0.78	0.60	107

## Q15\_2 - Why this grade?

Priorities of the list  
Don't  
..Clear  
Do  
..Fair queue  
Don't  
Do  
No added value  
Do  
Don't  
No added value  
No added value  
Do  
No added value  
No added value  
Typing the question  
No added value  
Do  
Typing the question  
Do  
Do  
..Fair queue  
..Getting help  
Do  
Do

Why this grade?

Sometimes the priorities of the TA's affect our goals. Like me and my partner want to ask a question but too much attention is given to the signing off and vice-versa.

The site makes it very overviewable who needs help with what, and the category system makes it a lot less cluttered (with the previous version the TAs made over 4 categories for sign-off and multiple question lists). Also, it makes an actual queuing system that shows you how many people are before you and you are less likely to be skipped, opposed to an analog version of raising hands. However, it does not red

it isn't a huge upgrade from the previous system, but still a good working system

Because it is a great way to create structure in the questions but when it doesn't work it is immediately a total mess and the extra features were okay but slightly useless

it works, but i liked the option for different list with other priority more.

It's great not to have to put your name on the whiteboard, but all the extra functions are unnecessary for me.

Because I get the idea that typing out the question does not help in any way and makes the asking take unnecessarily long

although it is useful to specify the exact type of question, i can just explain my problem to a TA also. So if there is a busy room with few TA's, I could be higher up the list if I asked faster... (hope i explained it well?) But apart from that specific scenario, i think this way of asking questions is very nice. It seems also useful to TA's, while they can prepare the question better.

Looks nice, have'nt found any problems with it so far, but then i don't use it a lot so I don't know if i should give it 5 stars I did not take this questionnaire into account.

It is fair and works smoothly.

ta-help.me is very helpful to get your question answered and keeps it fair this questionnaire on the other hand can be quite annoying

simple and functional design



Very simple and straightforward, please make the new interface look a bit not like a firstgraders affair with Photoshop gradients.

It's very complicated to put a question on the board. I feel like you should be able to add the explanation later. If I ask a question I've already searched several websites and asked my classmate. I don't want to explain the question again. There is a missing category: -meta. I often have questions about the question itself. And having to fill in a category for that is always a bit awkward. One of the TA's has wildly different standards compared to the others, I would like to request that I don't get that TA when I ask a question I know they will not be useful with. When I want to sign off multiple weeks I have to add myself multiple times. Mark my words this is going to be a problem after the vacation.



It is useful



It improves the programming course by significant amount and reduces the frustration of raising your finger and getting attention from the TA's. Now I can just sign-in and continue working, while I am queue for a question.



I really like the fairness of the system, and the efficiency. Of course there is always something to improve to it, such as the amount of subgroups you can sign in.



..Getting help  



..Continue working




Do  



Don't  



Do  

Do  



Don't  



..Fair queue   



Do  



Don't  

..TAs can prepare



Do  



Do  



Design  



Don't  



..TAs can prepa


Do  

Do  

Don't  

Typing the question  

Do  

Don't  

Don't  

Don't  

..Notification

Why this grade?

It helps to have your questions answered while you don't need to raise your hand all the time

It is good, but something always can be improved.

The new version can make us ask our questions more specifically, but sign off doesn't need to be very precise.

I think it would be good to have a site that is simple, as of now I feel like there are too many steps before a question can be put on the site. Adding too many functions can make the site too complex.

Because I like that the order is controlled this way: it feels quite fair. However, in pur minor group, there aren't particularly a lot of questions and formulating the question with the new system costs quite a lot of time for being practically helped immediately.

it helps TAs more than students but overall its good.

First of all I like the new design, even tho whit text on sometimes bright yellow back color is a bad idea. The system works very well and an early explanation of what your question and sign off is about, prepares the TA for you

Its simple and serves its purpose well

I dislike the part where you have to write your question as well as the fact that it takes so many screens. Asking a question takes way too long this way

Good usage, but formulating question part is a step too much. TA dont really look at it i think and takes more time to fill a question which you again have to formulate to the TA

It's ok

- The dark theme looks really awful on a projector. (And the blue and white top bar looks like it came straight out of windows 95) - I tend to look over the notifications for some reason, because I've become a bit insensitive to them because all of the notifications you get nowadays. I usually end up on the end of the list again. An option to make the site do everything to catch your attention would be great.

The concept is great, the new implementation not so.

New site bad

I think it is helpful that there is a list you can put your name on, so that you don't have to raise your hand and that you will be helped when it is your turn. However, with the questions (new version of the system) I was skipped, because a TA couldn't help me because he saw what it was about. Before, he would have come and try to figure it out with me or ask another TA, which takes a bit more time, but feels fairer because I get help when it's my turn. Plus, I am not a big fan of how it looks now

It seems to me that the platform is a good way to distinguish questions from sign-offs. Moreover, does it organize the sessions well, and peoples needs get treated in a fair manner and proper order.

sometimes it is not working, other times TA like a particular person and spend a longer time with them.

I like the new version, except the font and colours chosen. Taking into account that I do not how any eye problems, the font is too small to read, the black colour for the background and bright colours for question/signoff details make it even harder to read.

I liked the previous version of the side. There you could quickly get in line for a question or sign of and work on on other stuff. In this new version you need to fill in all kinds of things which distract you from what you are doing.

Don't  
 ..Beamer  
 Design  
 Do  
 Do  
 Don't  
 Typing the question  
 ..Categories  
 No added value  
 Do  
 Do  
 ..Categories  
 Do  
 Don't  
 Design  
 Do  
 Do  
 Typing the question  
 Don't  
 No added value  
 Do  
 ..Categories  
 Do  
 Suggestion  
 Do  
 Do  
 Design

Why this grade?

I like the system, but I reaaaaly dislike the colours. The colours are fine on PC, but on a beamer they are not. Light science is different for a beamer than a PC screen. For example, the dark colours can't get any darker than the surface that is projected on, so the dark colours look worse on a beamer, and are not as clear. This means that the 'dark theme' makes it so it is more difficult to read the words on the page than in the previous light mode. One more comment: Maybe the room code can be made a little bit bigger (so it is better visible from the back of the room).

I like it that you can ask questions easily, but it takes too much time to actually come up with the question to write it down on ta-help.me. It is a good thing to distinguish between weeks and questions, but that should be all I think

I prefer the old ta-help.me over the new one. The new one has too many features which makes simple Q&A protocol more complicated.

It's very useful but doesn't stand out in any significant way.

It is nice and helpful

It is better than waiting with your hand raised all the time. The categories are useful for prioritising.

I like the simplicity

Nothing is perfect

TA-help me is very very useful. Especially when you don't know what to do anymore, there is always a TA who is able to help you. The updated TA-help.me allows you to specify your question. But, the student's question is not limited, so the whole specifying part takes more time (the previous ta-help.me put you directly on the list) as the student (most of the time) definitely asks more than what he/she specified on TA-help.me.

The system is nice, but I think that the new improvements do not add any value. Just adding a week number etc. behind a name is not useful at all when it does not enable any additional functionality.

Because although I like it a lot, it's still isn't perfect yet. I think it will be better if teaching assistants or students could indicate how long signoffs or questions will be handled by the TA, but only seen by the TA's so that TA's could help those who want to ask a short question before helping students who want to sign off lots of stuff, rather than having the former wait a long time for the sign off to finish

Because  $8/2 = 4$ . It's a good site, both the previous iteration and this one. It helps TAs keep an overview over the class, and it is very helpful for students to ask questions.

Looks great, Functions great

It works and there aren't any big drawbacks

Ta-Help.me is really helpful, even in the previous version. This is my first time seeing such method for asking questions so it's really interesting. I hope Ta-Help.me will always be used in the upcoming practical sessions for each module.

It seems like a really good system, with or without the new updates, which are interesting and cool and all but all they do is make the question asking process take a longer time. Still, it makes no difference to me.

The ta help me is a good site but the update isn't

I like ta-help.me as a tool, but the last update is, in my opinion, a downgrade.

Don't  
 ..Categories  
 Typing the question  
 ..Categories  
 Design  
 Do  
 ..Categories  
 Typing the question  
 Do  
 Don't  
 Typing the question  
 Do  
 Design  
 Do  
 Do  
 Do  
 Do  
 ..Getting help  
 Don't  
 Design  
 ..Takes longer  
 Typing the question  
 Don't  
 Design  
 Do  
 Do  
 Typing the question

Why this grade?

Choosing a category is quite annoying because it takes some time. Moreover, some questions are quite difficult. This means questions need to be explained in a text instead of a short question. By asking my first question with this new TA-help.me, I already struggled to formulate my question. The text field for inserting the question is too short. Additionally, I would prefer having a multi line text field to read my question before I send it. Apart from the time taking process of the categories and the input field, the new system is good. A solution for the categories might be, that it suggests some categories that you can choose with one click.

Design and utility.

It is useful to tell what the question is about, so the TA has an idea when he comes to me, but sometimes you have an question that does not fit in any of the options that are given

It is a good and simple system to ask questions or request a sign off. I dislike the specify question option though because you always explain your question when the TA is with you and can look at your screen.

Liked the new design

it's very nice right now

It is good right now, but there is still room for some improvements

It is a nice and helpful site

Because it works well, and is very handy to see when you will be helped.

The new design is horrendous. My eyes hurt from the gradient. Previously, we just clicked a button and we could ask a question, but now we have to go through a whole process for just one question. It's too time consuming. And the design, again. Please, people can get seizures from the colors...

It works and is helpful.

Clean and simple website; deduced a star, because of the overcomplication of the questions

I have the feeling it is not fair to judge this system with my experience as a ST student where there are a total of 30 students instead of 250. with the old version, you could really see more clearly when it is your turn as when you are the first in the newest week, you would be help first of all (instead of being somewhere low on the sign-off queue)

it works well but most of them there are too les TA's to be usefull

It is really annoying, during math we do not use it and our questions get answered way quicker

There is always room for improvement in anything that you do.

It works perfectly fine

it's nice to show what your question is by the specification

Works efficiently, and you know at what point in time you'll be helped

TA-Help me as I see it is just a way to organize asking questions and sign-off exercises. While I do like the ideas of the dark mode I'd rather it be optional since you really can't see anything on the projector screens. As for the categorized sign-off and questions I fail to see how that is useful in anyway and the fact that you can be skipped over for sign-off on the same list is rather annoying especially when you are at the end of the session. I get why the changes were made, but at this stage it feels like you are overthinking a simple listing system.





Q16 - If you could make one significant change, what change would you make?

- ..Queue algorithm
- ..Question visibility until
- ..Don't type the question
- ..Back-up system
- ..Old version
- ..Priority lists
- ..Old version
- ..Don't type the question
- ..Don't type the question
- ..Edit the roomcode
- ..Design change
- ..Design change
- ..Notification settings
- ..Max time for a TA to help
- ..Explain question later
- Don't
- ..Categories
- ..Request a TA
- ..Multiple sign off weeks

If you could make one significant change, what change would you make?

---

I would implement an algorithm for ta-help.me that will switch occasionally from one queue to another, maybe in a smarter way, I do think that new version implements some sort of foundation of this concept.

I heard from a few TAs that they can't read my question anymore once they click on my name. I would change it in such a way that the question will go away when the help is finished.

remove that you have to ask the question on ta-help.me

Back-up system

Change it back to the old version, the newer version just takes longer

more lists with different priorities if other priorities are present

I'd just like to put my name on the board without filling then of thousands of questions beforehand

.

I would take out the option to type out the question

...

maybe an option to "fast-ask", aka, get on the list with one click of a button. But that option would defeat the purpose of the extensive ask button. I would also like the website to not require a roomcode anymore. I don't like to look at the screen to type over a random set of characters. (I get why this is necessary, but I am not a fan)

those popups above the question and signoff fields would be dark grey with light gray text to make the design easier on the eyes

Have a white background.

Settings for notifications instead of simply 1 setting.

a maximum amount of time that a ta can help someone, somewhere around 10 minutes, because sometimes we had to wait the whole session and we did not get a turn to ask a question.

n/a

I would change this survey because the questions are really weirdly asked. Also, never ever ever ever again make a slider for age. TA-Help me is cool btw.

It's very complicated to put a question on the board. I feel like you should be able to add the explanation later. If I ask a question I've already searched several websites and asked my classmate, I don't want to explain the question again. There is a missing category: -meta. I often have questions about the question itself. And having to fill in a category for that is always a bit awkward. One of the TA's has wildly different standards compared to the others, I would like to request that I don't get that TA when I ask a question I know they will not be useful with. When I want to sign off multiple weeks I have to add myself multiple times. Mark my words this is going to be a problem after the vacation.

..Not having to fill in name

..Old version

..Messaging system

..Edit the roomcode

..One queue

..Old version

..Don't type the question

..Don't type the question

..Design change

..Design change

..Don't type the question

..Less navigation screen

..Don't type the question

..Design change

..Design change

..Old version

..Max time for a TA to help

If you could make one significant change, what change would you make?

N/a

No significant changes, however not having to fill in my name everytime would be nice.

I would not make a significant change.

Keep the old system

Messages smth like that

Nothing

I think it should be the verification code, the code should be all the digits, instead of the combination of number and words.

.

Now, there are several waiting lines for questions and sign-off, maybe this could be one list and the TA can still give priority to questions for instance.

bring the previous version, that was fine, it takes so much time to just ask a question in new version

drop the "whats your question?" thing, its easier to explain in face to face, you could argue that it makes you think, but you can also just not put an elaborate question there, the ta is still going to help you.

No white text on a bright yellow background (when selecting what your question/sign off is about)

Dont try to add TOO many things. Keep it simple and clean, the new version has some useless features to me, like the excessive disco colouring. Color coding the weeks is a pretty useful things but keep the colouring simple and sleek.

I would take out the part where you have to write your question as well as minimize the number of screens you need to navigate to ask a question

no question section anymore

Please get rid of the colours or make them useful, furthermore, have you ever made a questionnaire? Very often my choice was not available

Add a light theme on the projector. The dark theme is just too hard to read on a projector, (The dark theme is fine on my own computer, so it would be great if we could keep an option for that.)

-

Old site back

Maybe not necessarily change the system, but the number/kind of TA's. Not only should there be enough TA's for the amount of questions, but also there should be some more experienced/longer studied TA and a less experienced/less long studied TA. This way they could divide the questions better between them and the harder questions would take a bit less time, because the more experienced TA would help them. (And I would have no gradients in the interface)

-

make a feature that ensures TAs spend almost equal time with every person

If you could make one significant change, what change would you make?

-

The design and font

I would make different columns for which you could sign up depending on the issue

I repeat my comment at section 'grade': The colours are fine on PC, but on a beamer they are not. Light science is different for a beamer than a PC screen. For example, the dark colours can't get any darker than the surface that is projected on, so the dark colours look worse on a beamer, and are not as clear. This means that the 'dark theme' makes it so it is more difficult to read the words on the page than in the previous light mode. One more comment: Maybe the room code can be made a little bit bigger (so it is better visible from the back of the room).

Less choices

Change it back to the previous version.

A button to be able to go back to the main room page any time during the creation of a question.

Dont know

Not remove my entry name when I close my laptop. It was almost my turn, when I went to my bathroom and closed my laptop, when I came back I got a "Lost connection" error which removed me from the list.

When it's busy, being able to help other students on questions you understand

I can't really think of anything

Change the white text on yellow buttons

See your sign-off progress, so you can see what you signed off

Not random room codes but the actual room number or something

Maybe specify which TA you prefer. In some cases you want to sign-off. One TA claims that you need to change something. After the change, you want to sign-off, but then another TA comes and doesn't sign you off anymore.

Revert to the simplicity of the old TA-help.me. And step by step try to implement new functionalities when they are really useful. Just focusing on a flashy new layout is, in my opinion, not very useful for an application like TA-help.me.

nothing


Let people give an indication of how long their thing (signing off/ question) will probably take.

I can't think of one right now

layout could be changed a bit

I think everything's there, so it's perfect.

Maybe add the time someone has been in queue for the TAs to see. This looks useless, but maybe they will see that when they stay too much with one person others have been waiting for too long

..Design change 

..Design change 

..Less navigation screen 

..Old version 

..Design change 

..Entry loss by closing la 

..Help eachother 

..Design change 

..Sign off progress over 

..Edit the roomcode 

..Request a TA 


..Old version 

..Indicate needed time 

..Design change 

..Waiting time visible 

..Max time for a TA to h 

- ..Old version
- ..Less navigation screen 
- Do 
- ..Multi line question entry 
- ..Less navigation screen 
- ..Multiple sign off weeks 
- ..Sign off progress over 
- ..Don't type the question 
- ..Edit categories 
- ..Design change 
- ..One queue 
- ..Waiting time visible 

- ..Design change 
- ..Old version 
- ..Priority lists 
- ..Edit categories 
- ..Don't type the question 
- ..Priority lists 
- ..Edit the question 

- ..Dismiss announcements 

If you could make one significant change, what change would you make?

roll back the update

Remove the tags from questions, it takes very long to ask a question now. I like the dark mode btw.

Making a faster selection feature for categories. Expanding the field lengths of questions and make in a multi line text field.

I would change the option to choose two weeks for the sign off in the same time.

Add the question number to the sign off.

remove the specify question function(not the choose week function) more TA's

Not sure if it's added but ability to change the categories after submitting a question or sign off

more epic themes

We can move the question into sign off , Or move the sign off thing into Question.

I would not change anything to be honest.

Add estimated time till question gets answered

nothing

No changes

Remove dark theme

Change it back to the previous site.

Rank students in the order they will be helped, for example right now students on the list with a higher week number are usually helped first. However, in the list they are ranked below other students who will have to wait longer.

Reduce amount of categories for questions; TAs actually helping in order (non-site related)

return the option to split sign-off to multiple queues, retain the part where you need to specify your question

instead of updating the site make sure there are enough TA

The possibility to change my questions

Null

No change

I don't have improvement points

Add a way to dismiss announcements

- ..Edit the roomcode
- ..Beamer view
- ..Priority lists
- Do
- ..Don't type the question
- ..Beamer view
- ..Old version
- ..Dismiss announcements
- ..Dismiss announcements
- ..Old version
- ..Don't type the question
- ..Edit the roomcode
- ..Not having to fill in name
- ..Beamer view
- ..Don't type the question
- ..Don't type the question
- ..Priority lists
- ..Priority lists

If you could make one significant change, what change would you make?

Make the room code display bigger, so it is easier to read from a distance.

the lay out on the board could be without all those specifications, just the names is fine

Actually prioritise the sign offs

Keep the categorized sign-off and question system in terms of weeks, this can be useful in the way I saw the new system being used (i. e. two lists for questions and sign-off). Remove the individual questions tab since it gets rather tedious to chose every time you want to ask a question. And make dark theme optional, because while I like it on the laptop I don't like it on the projector screen (mainly because you can't see anything).

Remove the update and stick to the simplicity.

Close announcements (&& An animation on the screen with a dancing monkey fighting with a nullpointerexception)

Being able to close an announcements when you've read them

None

Remove the categories, and remove the feature to add a question when adding yourself to the question list.

For the TA's to be able to choose whether or not to use the categorization functionalities. Because our group is quite self-sufficient and the question list never is long, the TA's just ignore the typed out questions and come to us immediately. Now it just costs us time to select from all the different options, even though it would only be useful when there's loads of people in the queue

See last question.

A link to student accounts that would allow one to select a room from the timetable instead of having to type in a code. This could probably also reduce the amount of times I have to re-enter my name

none

make Zimbabwe Rhodesia again.

Make that no one can see who is asking what on the beamer

no

Let me skip asking a question and just add me to the list.

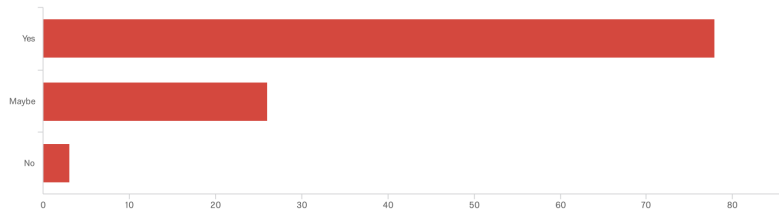
see previous answer

Remove the extra options when adding yourself to the list, except for what exercise you are on

Make TA's prioritize people who are signing off, rather than answering questions.

More clear category. And some indication of priority from the TA's. Sometimes they do the questions before sign-offs and i would like to see that

Q17\_1 - Would you like to use this site in other tutorial sessions?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Would you like to use this site in other tutorial sessions?	1.00	3.00	1.30	0.52	0.27	107

#	Field	Choice Count
1	Yes	72.90% 78
2	Maybe	24.30% 26
3	No	2.80% 3
		107

Showing rows 1 - 4 of 4

## Q17\_2 - Why?

Why?

The study supervisor will notice me more easily and also he/she is going to know how to act in a more efficient way.

In Math tutorials it is never sure that everyone gets help quickly and people could be overlooked if they don't raise their hand properly. When this (seems to) happen, you tend to have it figured out by yourself or have it unsolved at the end of the session. I would like to see this pop up in Math too.

ta-help.me is very usefull, but whether it is the old version or this one does not really matter

It's usefull

because in other modules you had to wait and was inproductive while waiting.

Prinicple is nice

It's quick and it does not make my arm hurt

the system is fair, everyone gets the chance to ask their question

It is fair and clear.

with math, it is not really needed because there are not that many questions there. so, for now, all the sessions where it is handy, it is being used. but maybe later when we get different or busier sessions.

it's a good way to organise a list of people with questions / sign-offs

Quickly and efficiently manages questions

This being ta-help.me, not this website itself which colour scheme makes it very hard to see whether or not a radiobutton is pressed and which requires me to click multiple times on the radiobutton before it works.

It's usefull

Such a good system, which improves the amount of time effectively spend on the tutorial session, rather than trying to get attention from a TA.

It is more efficient than just raising your hand

See other questions

It helps :D

I think it makes it easier to ask questions.

Because with my studies there aren't a lot of questions, so it wouldn't be very necessary, but I think it would be a useful tool to facilitate the tutorials for bigger studies with more questions.

i like it

Why?

I like the queuing system, it is a reasonably fair way of handling questions.

I would not like to use it anymore because I don't like the MANDATORY sign off sessions, it's frustrating and stressful. I would only like to use it for Q & A sessions and for TAs to help me

It spares me a sore arm

i don't mind the system that much

It depends on how it is used, as with a lot of the questions asked in this questionnaire

It's quite convenient, but you don't have the artistic freedom of a whiteboard when writing (or drawing) your name.

It helps getting an answer quicker and is easier to ask questions

Why not

Because it is a nice overview for the TAs and it feels (is) fair for the student

If there is the urge to get a question answered and one does not want to wait for the lecturer to ask, this platform is a good way to ask and get fairly treated.

makes it easier and faster to ask questions

For math it will be useful.

It makes it very clear whose turn it is to ask a question and you know when to expect help and can plan for it

In many other tutorial sessions, there are not as many questions, because no one has to sign off their work. This means that there is no queue, so this system is not needed.

because it is fair, and everyone is helped equally to the amount of questions someone wants to ask

It's really helpful for asking questions etc.

It's very useful

It is useful and a lot better than keeping your hand raised until you get help

Because it is useful.

very useful

it's very useful. The TA directly comes to you when you don't understand something.

The main purpose of TA-help.me is very good: enabling fast and fair communication between students and TAs.

It's really helpful for the session, and helps keep things organised.



Why?

Because I don't like keeping my arm raised for half an hour, it is way more comfortable to just put your name on ta-help.me.

It works well

useful

It is really helpful for asking questions.

Priority and queue for asking questions

because it is useful

it's useful

Might be helpful generally, but can be annoying if you need to formulate very complex questions.

Because it is a faster and organized way to get answer at your questions

You don't always need your laptop in other tutorials, and then it is not useful to open your laptop only for this system.

For practical sessions it is very convenient but I don't know how it would work in other scenarios so I am a bit sceptical as to how it would work out.

We already do everywhere

it's helpful

It is good

It is a nice and helpful site

Because it is nice.

I would like to use the PREVIOUS ta site because it's useful.

It is way better than having to keep your hand raised until you are finally helped.

Don't really care

because not all tutorials have such a need for ta-help.

with math sometimes you have to wait long and sometimes you are helped in 30 seconds its very inconsistent

I like raising my hand since it is way quicker and more useful

It really depends on the session. If the class is too big it might not be handy to put your hand up if it hard to see.

Because it is useful and everybody gets help in the right order, which makes it fairer

Why?

Only if it are tutorials sessions where a lot of questions get asked, aka if there are more questions than TA's in the room

for math

It works much better than not having it.

It is the only way to sign-off or get you questions answered.

The only tutorial session I have is math and there are less questions, so it is not necessary per se

It's useful, and better than the previous version.

idk

issa good

Easy for everyone to get their questions answered in a timely manner

is still inconvenient for complex questions

I don't have to keep raising my hand, and questions get answered in a fair order

At Mechanical Engineering they do not use this at all.

Q18 - Do you agree or disagree with the following statements?

- Agree 
- Agree 
- Agree 
- Agree 
- Disagree 
- Agree 
- Agree 
- Agree 
- Agree 
- Agree 
- Agree 
- Agree 
- Agree 
- Disagree 
- Agree 

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Overall the site is attractive	1.00	4.00	2.87	0.76	0.58	102
2	The sites graphics are pleasing	1.00	4.00	2.70	0.85	0.72	102
3	The colors used throughout the site are attractive	1.00	4.00	2.61	0.92	0.85	102
4	The typography (lettering, headings, titles) is attractive	1.00	4.00	2.75	0.69	0.48	102
5	It is hard to find my way around the site	1.00	4.00	1.53	0.72	0.52	102
6	Informations is layered effectively on different screens	1.00	4.00	2.86	0.61	0.37	102
7	Information is easy to read	1.00	4.00	2.94	0.71	0.51	102
8	Information is written in a style that suits me	1.00	4.00	2.98	0.64	0.41	102
9	Screens have the right amount of information	2.00	4.00	3.03	0.62	0.38	102
10	The site is designed with me in mind	1.00	4.00	2.71	0.75	0.56	102
11	The site is well suited for first-time visitors	1.00	4.00	3.18	0.62	0.38	102
12	The site is well suited for repeat visitors	1.00	4.00	3.28	0.62	0.38	102
13	The site has a clear purpose	1.00	4.00	3.31	0.70	0.49	102
14	I always felt I knew what was possible to do next	1.00	4.00	2.93	0.70	0.50	102
15	My mistakes were hard to correct	1.00	4.00	2.10	0.79	0.62	102
16	The site is mobile friendly	1.00	4.00	2.66	0.65	0.42	102

#	Field	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree	Total
1	Overall the site is attractive	6.86% 7	15.69% 16	60.78% 62	16.67% 17	102
2	The sites graphics are pleasing	13.73% 14	14.71% 15	59.80% 61	11.76% 12	102
3	The colors used throughout the site are attractive	16.67% 17	19.61% 20	50.00% 51	13.73% 14	102
4	The typography (lettering, headings, titles) is attractive	5.88% 6	21.57% 22	63.73% 65	8.82% 9	102

#	Field	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree	Total
5	It is hard to find my way around the site	58.82% 60	31.37% 32	7.84% 8	1.96% 2	102
6	Informations is layered effectively on different screens	1.96% 2	20.59% 21	66.67% 68	10.78% 11	102
7	Information is easy to read	4.90% 5	13.73% 14	63.73% 65	17.65% 18	102
8	Information is written in a style that suits me	1.96% 2	15.69% 16	64.71% 66	17.65% 18	102
9	Screens have the right amount of information	0.00% 0	17.65% 18	61.76% 63	20.59% 21	102
10	The site is designed with me in mind	7.84% 8	23.53% 24	58.82% 60	9.80% 10	102
11	The site is well suited for first-time visitors	0.98% 1	8.82% 9	61.76% 63	28.43% 29	102
12	The site is well suited for repeat visitors	0.98% 1	5.88% 6	56.86% 58	36.27% 37	102
13	The site has a clear purpose	1.96% 2	7.84% 8	47.06% 48	43.14% 44	102
14	I always felt I knew what was possible to do next	0.98% 1	25.49% 26	52.94% 54	20.59% 21	102
15	My mistakes were hard to correct	21.57% 22	51.96% 53	21.57% 22	4.90% 5	102
16	The site is mobile friendly	5.88% 6	26.47% 27	63.73% 65	3.92% 4	102

Showing rows 1 - 16 of 16

## Q19\_1 - What are the two things you liked best about the site?

What are the two things you liked best about the site?

First, that its definitely an improvement. Secondly, the categories.

The new categories Knowing your question will come up at some point

the fact that it is possible to write an actual question, the options you get to aks the question, e.g. the sign-off weeks or project, etc.

dude like come on it's a simple website not a theme park

Fairness Clearness

Being able to be helped easily

it is easy to use and very helpful

N/a

Easy to add yourself to a class Easy to add or remove questions

It helped me get help, and works almost always.

Help and sign offs

- The Ease of signing in to get help - Not spending unnecessary time on getting attention from the TA's

The subgroups and that you can see when you are next

That questions are answered in order and that you can keep working without having your hand raised

color, idea

Choosing specific exercise and asking a question

Helping System Dark Theme :D

It has a clear overview

It's literally a site to ask questions, I don't have two things in particular that I like about the site.

ui and functionality

it didn't really add anything, I guess the slider that allowed you to select a week was good. o and dark theme is always good.

the new darker design, the quick and effective response time

What are the two things you liked best about the site?

6 minutes are up

The categories for questions and sign offs and the fact that it does not display your question on the big screen

category section and colour design

Nothing particularly

(I have never used the mobile version of the website, so you can ignore the last answer on the previous page) It's quick and easy to use

-

Minimalist Easy to use (the previous version)

It is easy to put yourself on and off the list, I like the notifications so I can continue working will being on a list

Nothing to type in beside your name, and that it is just a click and go.

1. Quick 2. Efficient

- easy to use - Nice dark theme

Two separate lists(sign off and questions)

The queues The fact that you can see where you're in the queue

The fact that the queue is somewhat fair. The ease of use.

.

Previous version: 1. The simplicity 2. The stability of the website

1. It's now in night mode. 2. The colours that indicate what kind off question you have look fancy.

Easy to use Simple design

Categories Notification when it's your turn

1 it helps 2 easy to use

the simplicity the notifications

You don't have to hold up your hand.

Clear purpose Enough information

Wait time clear Notifications

What are the two things you liked best about the site?

its easy to use and user friendly

The idea is pretty simple and efficient.

THE DARK THEME

Effectiveness and sore-arm-saving.

You can be really precise in what help you want

fast clear

The theme, and it's function of choosing weeks.

um...queues?

The purpose of the site The dark mode

Dark mode and the fact that I can ask questions

Dark theme and the easy to use interface.

Design and utility

Questions and sign of in different lists, Reminder that it is your turn.

- The simpleness of the site - The clean overview

Design and usefulness

theme, specs of what your question is about

Convenient to Ask and sign off

it works well and gets me help

Queuing and priorities

the dark theme, and the colours

The dark mode, the coloured tags

simplicity and usefulness

Nothing. Sorry. Please change it back.

How it makes it easier to work while waiting for a student assistant. That questions are separated from sign offs.

What are the two things you liked best about the site?

The dark theme Not putting your hand up

Your name does not need to be your name, it works

idk

Knowing when i'm next and the notification system

Simple Clear

Fair order in response to questions.

Colours, Multiple lists

That you get a notification in your browser when a TA wants to help you with your question. That you can see how many people are already in the queue

Works fast, never any connection problem

the colors

Knowing when you'll be helped and being able to go for a coffee as a result of this.

It can be used to ask questions and sign-off. I really don't get what you want to ask here. If it about how it looks that really doesn't concern me. If it's about the functionality my answers for the rating and changes satisfy this question.

The simplicity

You know how many people there are still in front of you and your arm won't get tired from raised 10 hours.

You get a clear overview of the waiting list. You don't have to raise your hand for an hour

ease of use, and simplicity and efficient

black theme

Answered in questions before

It makes asking questions easier, and you don't have keep track of when a TA is available

The tags and the visible queues

i don't have to sit up with my hand in the air for hours at a time. It's nice that you can see how many people are before you in queue.

night theme seeing yourself go up the line for sign off

Nothing was standing out, pretty decent site overall



What are the two things you liked best about the site?

1. The usability 2 The overview

Being helped fairly, good design

- your position in the list is shown - the priority of your question - notification when is your turn

not raising my hand, order is fair

Simplicity

The clear view

## Q19\_2 - What are the two things you liked least about the site?

What are the two things you liked least about the site?

that i cannot insta-ask (go through the whole process of asking) I don't like the gradients on the questions. I would prefer a solid color

again, its a WEBSITE, it isn't like the most state-of-the-art webapp or anything why do you need to make me answer these types of questions?

nothing

Notifications were wonky

the waiting, but that is hard to solve, and the new need to fill in my question

N/a

Not able to edit questions. It's such a straightforward site, how could I even be able to think of two things? Really now. What's this survey?

the ridiculous new colour scheme which is incredibly vivid and hard to read from. It's very complicated to put a question on the board. I feel like you should be able to add the explanation later. If I ask a question I've already searched several websites and asked my classmate. I don't want to explain the question again.

N/a

- Filling in name everytime

not knowing how long the waiting list is and the many different subgroups

You can't ask a quick question in between The TAs have to walk to their laptops in front every time they helped someone

no bad things

None

TA Name List Dark Theme

The colouring of the words, when you ask a question

Same holds as last question.

the details required for a question in new version, sucks!

the redundancy in text you had to write. you still had to show it to a TA which didn't save you much time at all. if everyone took the "whats your question?" tab the way it is supposed to be used seriously it might save some time for the TA's.

There is nothing on the site I do not like

abc

What are the two things you liked least about the site?

The fact that I had to type out my question

filling in question

Same

- When you have to add your name for the first time, you click on "add to list", then you enter your name and then you have to click on "add to list" again, which is kind of annoying (especially if you clear your cookies every time you close your browser window) - Notifications are not obstructive enough

Color style

I have to write a room code Dark theme and the fact I have to specify the question(in new version)

The gradients, having to write your question is sometimes a bit hard, because I don't always know why my code isn't working and then I can't formulate a question, which also takes some time away from the easy/fast putting yourself on the list

For me personally, there is no such thing that I like best and such thing I like least. This platform has a clear purpose for me, that is if I have an urgent question or just want to get signed off, then I can indicate that on the page. - As long as it is easy to use and stays intuitive as it is right now, everything else is just extra.

1. that it does not work many times

- Lists sometimes get wiped - sometimes excessive amounts of click throughs

Design and font

The colors. The fact that I need to fill in multiple things

I'll repeat myself, again: I like the system, but I reaaaaly dislike the colours. The colours are fine on PC, but on a beamer it is not. Light science is different for a beamer than a PC screen. For example, the dark colours can't get any darker than the surface that is projected on, so the dark colours look worse on a beamer, and are not as clear. This means that the 'dark theme' makes it so it is more difficult to read the words on the page than in the previous light mode. One more comment: Maybe the room code can be made a little bit bigger (so it is better visible from the back of the room).

New site: 1. Too many tags I need to fill in before I can ask a question 2. Dark mode is nice for programming, but not for projectors in classrooms

1. It doesn't give me notifications like it does with others and I couldn't find anywhere I could enable them again. 2. When specifying what type of question you have it goes to a whole new page.

nvt

Delete entry when lost connection No aesthetically pleasing colours

It is more strategic to add yourself to the sign of list prior to finishing the exercise

the design the bugs

White text on yellow button

What are the two things you liked least about the site?

No progress bar for signoff No FAQ

Weird positioning of sections sometimes The room codes

takes unnecessary time to specify the question. The colours could be less dark.

The layout is way too complicated and distracting, the first version was way more effective since it looked simpler. The new version is overcomplicated while adding no useful functionalities.

nothing?

The black background and the fact you have to provide your name.

The announcement box doesn't really suit the color and graphics style of the site

screen usage last helped

Nothing.

um..queues?

the questions

The last update and the update that came last (except for dark mode of course)

category choosing. Sometimes you get skipped, if you need to leave the room for a second.

the thing that i have to fill my name everytime i open a new session.

All the things you have to fill in before you can ask you question. the lack of some question options

the specify question function --

No dislikes

idk

nothing

the color scheme

I don't know

it's fine

its fine

dark theme. it is hard to keep track of your position in the list, you have to go back and forth every minute

What are the two things you liked least about the site?

Every single aspect of it.

How the signoff list has become messy, first there were multiple sign off lists for different weeks, now it is one list where the order still depends on different weeks which is confusing. I don't think the gradients that have been added fit the website.

Not really knowing when it is your turn Between sessions closing of the room, even though it seemed like it was almost your turn

it has long queues due to shortage of ta's the Ta-help.me - room (key) gradient is hideous

idk

Everything else

Null TBH this questionnaire was more annoying than all the times I have used Ta-help.me combined.

Long waiting list

Announcements are written with very small letters

Sometimes the lists would move around the page, based on how many people are in the list

Can barely read room code, Can't find or change desktop notification option

dunno

Priorities aren't always kept to, plus it can sometimes take really long making you miss the sign off.

Again this information has already been stated in my rating and changes answers.

The update

You're not able to ask multiple questions at the same time. The announcements are very pushy and won't leave

You can't ask two question at the same time. You can't click announcement away

nothing

adding questions, categories

Answered before

Queues sometimes feel kind of unfair.

That the queues can give a false sense that it's gonna be your turn soon(when another queue has priority but is empty at that time) How do I dismiss these announcements they're cluttering up my screen

The room code is a bit unreadable sometimes. you can't select multiple weeks at once to sign off.

What are the two things you liked least about the site?

day theme waiting in line

See last answer

nothing

Colors covering up text, Having to always fill in a question

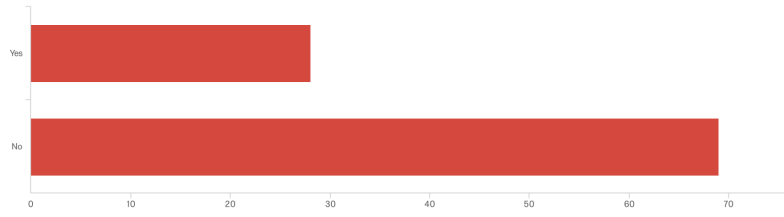
- categories that are now required

have to put in too much stuff to get my question through

Long waiting times

The colours

Q20\_1 - Do you have recommendations for improvement or features that you would like to see added to the site?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Do you have recommendations for improvement or features that you would like to see added to the site?	1,00	2,00	1,71	0,45	0,21	97

#	Field	Choice Count
1	Yes	28,87% 28
2	No	71,13% 69

97

Showing rows 1 - 3 of 3

## Q20\_2 - What recommendations or feature suggestions do you have?

What recommendations or feature suggestions do you have?

basically the things i mentioned before

Edit questions Change font size and re-arrange boxes yourself

A meta category

Change the room code to all digits plz

bring the old one back:)

no question section. And for the survey better readable dots/ more responsive dots(hard to see the dots)

All the before, tell me what the priority has. Show on screen it is my turn. That is sometime more visible

- Make the dark theme optional (or disable it on projectors) - When you first enter the website, make it so you don't have to click twice on "add to list" (once before entering your name, once after you've been asked to enter your name) - Prevent people from using the lyrics of Zoutelande as their name. (Or elide names if they are too long)

No gradients

1. Increase font 2. Change style 3. Change colours 4. It is better to have black letters on light background, not vice versa 5. Remove the function to write a question, because sometimes it is really difficult to write down shortly

All the things I mentioned earlier

.

Don't remove entry when lost connection (when laptop closed). Better colours

Like I said in the previous question

FAQ Progressbar for sign off

Make it so you can type in the actual room number instead of some random code (let the TAs choose a custom code)

specify TA(s) you prefer to have.

Smart sequencing of signoff candidates, by using certain heuristics based on their progress.

Indication of how long a certain TA will assist (question/sign off) a student, could be indicated by students and TA's, but can only be seen by a TA. Also sometimes when I put my name on the list and the session is almost over, there is a possibility that I wouldn't get assisted by the TA's (possibly because of long list of students). I wish there was a way to know if I will probably get assisted by the TA's (possibly also using the first feature I mentioned).

No time sorry :(



What recommendations or feature suggestions do you have?

multi line question text field. More characters allowed to the question. Faster category choose

revert dark theme

Just change it back to the previous site. It was easy on the eyes and simple.

Please add an easy to find options to toggle desktop notifications

see the previous questions, did you guys actually think survey through? because it feels like this third time I answered this question.

Click announcement away Ask multiple question

Maybe add a timer how long people have been on the list. I understand people who are on schedule have priority, but leaving people who are further behind to wait longer only increases their backlog. Adding a timer would probably make waiting time more fair. Apart from that, having to define a question under "other" sometimes feels kind of redundant, there should be an option to keep it empty.

Like I elaborated on before student account integration

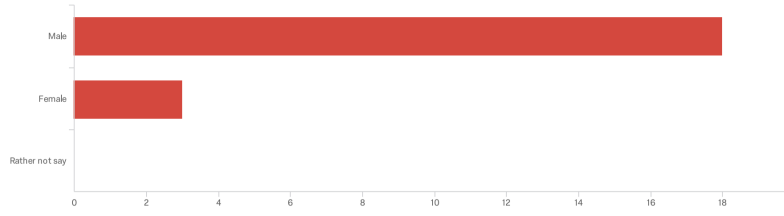
**End of Report**

## **V.2 TA results**

# Default Report

TA-help.me T and TA questionnaire  
January 17, 2019 6:03 AM MST

## Q4 - What is your gender?

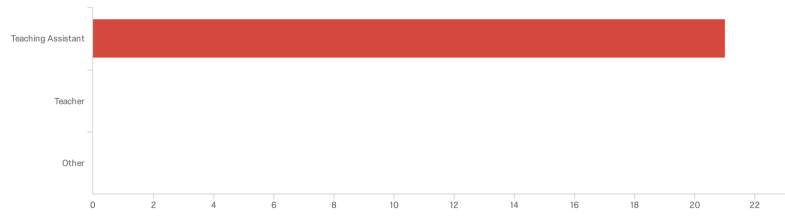


#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	What is your gender?	1.00	2.00	1.14	0.35	0.12	21

#	Field	Choice Count
1	Male	85.71% 18
2	Female	14.29% 3
3	Rather not say	0.00% 0
		21

Showing Rows: 1 - 4 Of 4

Q1 - What is your function during this tutorial?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	What is your function during this tutorial? - Selected Choice	4.00	4.00	4.00	0.00	0.00	21

#	Field	Choice Count
1	Teaching Assistant	100.00% 21
2	Teacher	0.00% 0
3	Other	0.00% 0
		21

Showing Rows: 1 - 4 Of 4

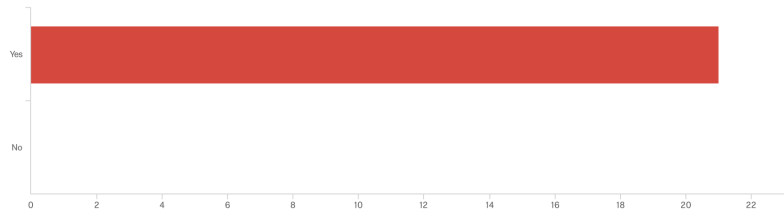
Q1\_6.TEXT - Other

Other

### Q3 - How old are you?

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Age:	18.00	25.00	20.62	1.62	2.62	21

Q18 - Have you used the TA-help.me site before this week?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Have you used the TA-help.me site before this week?	1.00	1.00	1.00	0.00	0.00	21

#	Field	Choice Count
1	Yes	100.00% 21
2	No	0.00% 0

21

Showing Rows: 1 - 3 Of 3

Q19 - Do you agree or disagree with the following statements?

Neutral   
 Neutral   
 Agree   
 Agree 

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	I like the previous version better than the new version	1.00	4.00	2.52	0.73	0.54	21
2	I have the feeling that I can help students quicker than with the previous version	1.00	5.00	2.81	1.22	1.49	21
3	The question categories in the new version were helpful	1.00	5.00	2.43	1.29	1.67	21
4	The signoff categories in the new version where useful	1.00	5.00	2.00	0.93	0.86	21

#	Field	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree	Total
1	I like the previous version better than the new version	4.76% 1	47.62% 10	38.10% 8	9.52% 2	0.00% 0	21
2	I have the feeling that I can help students quicker than with the previous version	19.05% 4	19.05% 4	33.33% 7	19.05% 4	9.52% 2	21
3	The question categories in the new version were helpful	33.33% 7	23.81% 5	14.29% 3	23.81% 5	4.76% 1	21
4	The signoff categories in the new version where useful	28.57% 6	52.38% 11	14.29% 3	0.00% 0	4.76% 1	21

Showing Rows: 1 - 4 Of 4

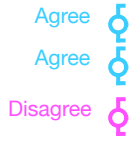
Q29 - Do you agree or disagree with the following statements?

#	Field	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree	Total
1	The question categories were helpful	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0
2	The signoff categories were useful	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0

Showing Rows: 1 - 2 Of 2



Q30 - Do you agree or disagree with the following statements about the new version of the site ?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	It was easy to choose to help a student	1.00	8.00	2.50	1.50	2.25	20
2	I could quickly see what questions the students had	1.00	8.00	3.00	1.60	2.57	21
3	The pop-up that gave me the option to help all the students with that question or just the one that I chose was useful	3.00	8.00	6.76	1.74	3.04	21

#	Field	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree	I don't
1	It was easy to choose to help a student	5.00% 1	80.00% 16	0.00% 0	5.00% 1	5.00% 1	0.00% 0	0.00% 0	5.00%
2	I could quickly see what questions the students had	14.29% 3	28.57% 6	28.57% 6	14.29% 3	9.52% 2	0.00% 0	0.00% 0	4.76%
3	The pop-up that gave me the option to help all the students with that question or just the one that I chose was useful	0.00% 0	0.00% 0	9.52% 2	4.76% 1	9.52% 2	14.29% 3	0.00% 0	61.90%

Showing Rows: 1 - 3 Of 3





Q31 - Did you like or dislike certain features?

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Questions beneath the name of the student	1.00	5.00	2.33	1.17	1.37	21
2	The ability to edit the question of a student	2.00	5.00	3.19	0.59	0.34	21
3	The ability to delete a question of a student	2.00	5.00	3.05	0.65	0.43	21
4	The categories for the questions	1.00	5.00	2.24	1.06	1.13	21
5	The categories for the sign-offs	1.00	3.00	1.67	0.71	0.51	21
6	The option to choose who to help from the list	1.00	4.00	1.95	0.90	0.81	21
7	Helping several students simultaneously	1.00	5.00	3.00	0.76	0.57	21

#	Field	Like a great deal	Like somewhat	Neither like nor dislike	Dislike somewhat	Dislike a great deal	Total
1	Questions beneath the name of the student	33.33% 7	19.05% 4	33.33% 7	9.52% 2	4.76% 1	21
2	The ability to edit the question of a student	0.00% 0	4.76% 1	76.19% 16	14.29% 3	4.76% 1	21
3	The ability to delete a question of a student	0.00% 0	14.29% 3	71.43% 15	9.52% 2	4.76% 1	21
4	The categories for the questions	23.81% 5	47.62% 10	14.29% 3	9.52% 2	4.76% 1	21
5	The categories for the sign-offs	47.62% 10	38.10% 8	14.29% 3	0.00% 0	0.00% 0	21
6	The option to choose who to help from the list	38.10% 8	33.33% 7	23.81% 5	4.76% 1	0.00% 0	21
7	Helping several students simultaneously	4.76% 1	9.52% 2	71.43% 15	9.52% 2	4.76% 1	21

Showing Rows: 1 - 7 Of 7

Q17 - Do you agree or disagree with the following statements?

- Neutral 
- Agree 
- Neutral 
- Disagree 

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Typing out the question results in students thinking more critically about what they want to ask	1.00	5.00	2.75	1.13	1.29	20
2	The system seems fair to me	1.00	4.00	2.20	0.68	0.46	20
3	Giving students the option to choose a pre-written question is useful	1.00	4.00	2.50	0.67	0.45	20
4	Students asked less questions in this tutorial in comparison to tutorials that used the previous version of the site	2.00	5.00	3.55	0.92	0.85	20

#	Field	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree	Total
1	Typing out the question results in students thinking more critically about what they want to ask	15,00% 3	25,00% 5	40,00% 8	10,00% 2	10,00% 2	20
2	The system seems fair to me	10,00% 2	65,00% 13	20,00% 4	5,00% 1	0,00% 0	20
3	Giving students the option to choose a pre-written question is useful	5,00% 1	45,00% 9	45,00% 9	5,00% 1	0,00% 0	20
4	Students asked less questions in this tutorial in comparison to tutorials that used the previous version of the site	0,00% 0	10,00% 2	45,00% 9	25,00% 5	20,00% 4	20

Showing Rows: 1 - 4 Of 4

Q32 - You answered that students asked less questions. Please explain here if you think this is a bad result, and why you think the students asked less questions.

You answered that students asked less questions. Please explain here if you...

---

Q10 - If you had to give this site a grade what would it be?

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Grade	2.00	5.00	3.50	0.74	0.55	20

## Q11 - Why this grade?

No added value

..Generic question

Don't

Don't

Design

Do

Design

Do

No added value

Don't

Do

Design

..Multiple sign off wer

Do

Don't

..Categories

Typing the question

Do

Design

Do

..Priority lists

..Filtering or sorting que

Don't

Design

..Editing questions

Why this grade?

Improvements didnt really help me, since either the question wording was too generic, or I could see it when at the student quickly anyways. I fear it raises the bar for students to ask questions

New design of ta-help.me less clean than previous design new function are usefull

Needs improvement on user interface and looks, but the ideas are good

I don't think it's necessarily better than the old version. I feel like there might be too many features, and I personally prefer a simpler design. Also, when a student wanted to sign off for two weeks, their name was on the list twice, once per week, which was a bit inconvenient. It would be nicer if they were on the list once but just with two week tags.

Like the badges, sometimes the question option is useful. Dislike the dark design and gradients everywhere.

It is a really good idea, but some features like sorting or filtering tags is really missing. This would allow for easier prioritization of the lists.

Design is really last century. No gradients please. Editing questions in its current fashion does not work well enough because there is not time to edit the questions. Some students do not use the questions in a useful way. The categories are great.

I don't like the way the announcements take up most of the screen

I haven't really tested the new system a lot, but I really like the questions and sign-off categories. Besides that, I didn't really find much innovative features in the new version of ta-help.me

Because I feel that it doesn't add a lot of functionality to the previous system. I personally didn't look at the tags that were added by the students, but I only used the system with a tutorial where we had 9 students.

Functionality is still a bit buggy, more time seems to be spent on a fancy interface than on correct functionality

Same as the previous version - a 5. It's a very useful tool because of the gained overview.

It is pretty and has potential. I would have to work with it a little more to get to know all its functionalities though.

its good

I think the fact that students have to write the question in case the question is not in the list yet is time consuming.

If possible I would have given it a 3.5. If with this site you mean TA-help.me, then the following has to be said. Compared to using the whiteboard it is a real improvement, however, there is still a lot which can be improved. The previous version of TA-help.me was simply moving the lists from a whiteboard to a website. The current systems (which we used in week 6) added stuff like categories and questions, which helped me to "mentally" prepare. So when I decide to help a student, I quickly looked at the categories and the question they typed in and I could already guess what they were going to ask or at least what it was about. This was a big improvement for me as a TA. One of the biggest downsides is the design. The dark theme was interesting for students, but not very readable on the beamer. And the header was... interesting... It felt more like a first version (which it probably is), however a more modern design would also feel better.

The idea of the system is nice, but I don't think it will work with the students. Especially the part that you can choose what student to help should not even be an option since you should always help the students that assigned themselves first. First come, first serve.

..Priority lists  
No added value  
Don't  
..Generic questions

Why this grade?

I preferred the old site with lists for each week and subject, which makes it easier to prioritize certain weeks or subjects instead of having everything in one list. The option to add a typed question is not very useful, as most descriptions aren't clear enough and multiple students with the same question on the site do not necessarily have the same question

## Q12 - If you could make one significant change, what change would you make?

..Integration with sheet notes  
..Design change  
..Edit categories

..No simultaneous helping

..Filtering or sorting questions  
..Design change

..Rethink question editing

..Dismiss announcements

..Filtering or sorting questions

..Filter absent students

..LTI

..Design change

..Beamer

Do

..Room statistics

..Design change

..Less navigation screen

..Filtering or sorting questions

If you could make one significant change, what change would you make?

Integration with sheet notes

better design

Remove the categories of question altogether

I can't think of a big change I'd like to make

Remove the simultaneous helping

This version works fine in my opinion.

As said before, I really need the sorting/filtering options.

Remove all the gradients and on more functional fashion: Rethink the way questions are edited.

change the way announcements are made, either through a notification or some sort of timer to automatically make them disappear

Sortable tags (both TA-side and student-side)

Perhaps add a time-out, for which if the student hasn't had a working connection to the site in 5 minutes, they will be removed from the list. Now there are students who have left the room to go home, but are still on the sign-off list for example.

Integrate it with the university OAuth/LDAP, so names are actual full names.

Revert the new color scheme.....

The black background makes it a little hard to read the screen on a beamer. Maybe this could be improved by choosing another colour. However, the black is really pretty.

Nothing I can think of

Don't know if it is implemented yet, but whenever a student asks a new question maybe make it as a pre-determined question so other can choose it instead of writing it.

Room statistics. Because we work in 8 groups parallel, it sometimes happens that I am doing nothing while another group is very busy. The old solution was to open all rooms and look at the lists. Still is a bit annoying. I have used a browser plugin to switch tabs every second to go through the rooms, however, this will take 7 seconds if you have 7 rooms. Remco de Man has made a script to have statistics on how many people are on which list in which room and this gives us an opportunity to see within seconds if the other rooms are busy or not. Since it is part of Remco's script and not Ta-help.me, it would be appreciated if it would become part of Ta-help.me.

Make the layout more natural, without the colors

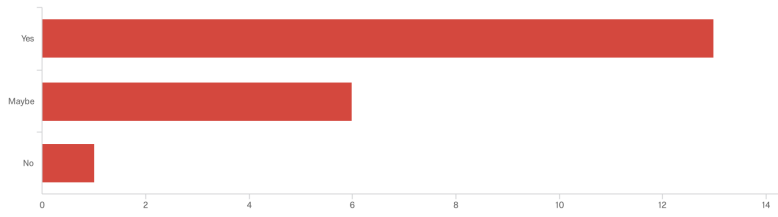
The amount of menus that you have to click through to add yourself to the list, I would make it a bit less

Split up the lists for the weeks like the old version would be a big improvement





Q13 - Would you like to use this site in tutorial sessions of other courses?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Would you like to use this site in tutorial sessions of other courses?	1.00	3.00	1.40	0.58	0.34	20

#	Field	Choice Count
1	Yes	65.00% 13
2	Maybe	30.00% 6
3	No	5.00% 1
		20

Showing Rows: 1 - 4 Of 4

## Q14 - Why?

Why?

It works easily for both parties

Makes it easier to work on exercises while waiting for question to be answered

Currently I like the old system more for its simplicity

If it's busy it's very useful since you know you'll be helped fairly but when it's not busy it's not really necessary, putting up your hand works just as well, also because all my other tutorials just had questions and not signing off.

Courses where TA-help.me was used before can use the positives from this site

Works well.

Because it is a really good way of letting students ask questions without having to hold up their hand for longer times, and it allows for easier prioritization of the lists.

Because it is very much more efficient than just raising hands or writing on a white/blackboard.

Useful way of organizing a tutorial

There are some improvements over the old ta-help.me, such as tags and question text

It still is too buggy to honestly recommend

Depends on the courses and the type of classroom setting.

Ta.help.me is useful

Cuz its good

Very easy to see what each student doesn't know what to do or what to sign of

Even if you have a group of about 20 people, it sometimes gets hard to keep with who raised their hand first or who wants to sign off what. With TA-help.me, it is for TAs very easy to set up (a room) and students very easy to ask a question. The threshold of using this system compared to other solutions (like using a board or handraising) is very low.

See previous answer

Its better than old fashioned raising your hand and waiting

Much easier to see than someone raising their hand

Q5 - Do you agree or disagree with the following statements?

Disagree  
Disagree  
Disagree  
Agree  
Agree  
Agree  
Agree  
Agree  
Agree  
Agree  
Agree  
Agree  
Agree  
Agree  
Agree  
Agree

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Overall the site is attractive	1.00	4.00	2.30	0.95	0.91	20
2	The sites graphics are pleasing	1.00	4.00	2.15	0.96	0.93	20
3	The colors used throughout the site are attractive	1.00	4.00	2.05	0.92	0.85	20
4	The typography (lettering, headings, titles) is attractive	1.00	4.00	2.70	0.71	0.51	20
5	It is easy to find my way around the site	1.00	4.00	2.90	0.89	0.79	20
6	Informations is layered effectively on different screens	1.00	4.00	2.75	0.83	0.69	20
7	Information is easy to read	1.00	4.00	2.80	0.93	0.86	20
8	Information is written in a style that suits me	1.00	4.00	2.80	0.81	0.66	20
9	Screens have the right amount of information	1.00	4.00	2.85	0.85	0.73	20
10	The site is designed with me in mind	1.00	4.00	2.65	0.73	0.53	20
11	The site is well suited for first-time visitors	1.00	4.00	2.50	0.92	0.85	20
12	The site is well suited for repeat visitors	1.00	4.00	3.30	0.71	0.51	20
13	The site has a clear purpose	1.00	4.00	3.35	0.79	0.63	20
14	I always felt I knew what was possible to do next	1.00	4.00	3.00	0.71	0.50	20
15	My mistakes were easy to correct	1.00	4.00	2.65	0.65	0.43	20
16	The site is mobile friendly	1.00	4.00	2.50	0.81	0.65	20

#	Field	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree	Total
1	Overall the site is attractive	25.00% 5	30.00% 6	35.00% 7	10.00% 2	20
2	The sites graphics are pleasing	30.00% 6	35.00% 7	25.00% 5	10.00% 2	20
3	The colors used throughout the site are attractive	30.00% 6	45.00% 9	15.00% 3	10.00% 2	20
4	The typography (lettering, headings, titles) is attractive	5.00% 1	30.00% 6	55.00% 11	10.00% 2	20

#	Field	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree	Total
5	It is easy to find my way around the site	10.00% 2	15.00% 3	50.00% 10	25.00% 5	20
6	Informations is layered effectively on different screens	15.00% 3	5.00% 1	70.00% 14	10.00% 2	20
7	Information is easy to read	10.00% 2	25.00% 5	40.00% 8	25.00% 5	20
8	Information is written in a style that suits me	10.00% 2	15.00% 3	60.00% 12	15.00% 3	20
9	Screens have the right amount of information	10.00% 2	15.00% 3	55.00% 11	20.00% 4	20
10	The site is designed with me in mind	5.00% 1	35.00% 7	50.00% 10	10.00% 2	20
11	The site is well suited for first-time visitors	15.00% 3	35.00% 7	35.00% 7	15.00% 3	20
12	The site is well suited for repeat visitors	5.00% 1	0.00% 0	55.00% 11	40.00% 8	20
13	The site has a clear purpose	5.00% 1	5.00% 1	40.00% 8	50.00% 10	20
14	I always felt I knew what was possible to do next	5.00% 1	10.00% 2	65.00% 13	20.00% 4	20
15	My mistakes were easy to correct	5.00% 1	30.00% 6	60.00% 12	5.00% 1	20
16	The site is mobile friendly	15.00% 3	25.00% 5	55.00% 11	5.00% 1	20

Showing Rows: 1 - 16 Of 16

## Q6 - What are the two things you liked best about the site?

What are the two things you liked best about the site?

Ease of use Scalability in comparison to old board system

very well suited for where it is used for and clear layout

Question still readable after checking it off Week numbers next to names is better than the old situation with the separate week lists

The week tags for the signing off (as far as a new features go)

The badge system and easy projector access

It is clear what students want to ask and what they want to sign off.

- The tagging system is pretty good - That it has a dark theme.

1. The categories for the questions. These are quite easy to maintain and are used the most by TA's. 2. The possibility to see who you helped last.

different lists for the signoff and questions, tags to show what the student wants signed off and what the question is about

Questions and tags

- That the students can put themselves on the list and work ahead, instead of raising their hands, - That the TA's can help the student more effectively now

The remind button and the room code

- Gained overview

It is easy to look at. Also, it functions great while doing a tutorial.

The usability and the notifications

The fact that there are categories for questions and sign off

Simple to use and to the point (not too much information shown to distract me from what I am supposed to do)

-

week indicators

A quick overview of who's waiting the longest and what they want (i.e sign off, questions)

## Q7 - What are the two things you liked least about the site?

What are the two things you liked least about the site?

Question details clutter view without much benefit Lack of integration with student following system

the blocks with the fading colours too much different colours

The color scheme The long sequence students have to follow, resulting in them skipping the filling in of the question

The colours, personally I think it's too dark

The design and lack of default notifications

The colors, it was clear but i felt it looked ugly. No other thing i didnt really like.

- The page where you add your question is a little messy in my opinion - Again, no sorting or filtering possibilities.

- The design. I cannot argue this enough. Dark mode should be an option. Gradients are last century. - The current implementation of questions: Questions are not that useful is people do not fill it in, There is no time to change the questions.

announcements and color scheme

Helping multiple students needs the exact same question phrasing No sorting of tags (e.g. weeks)

idk

The lack of connection with the UT OAuth/LDAP and questions

- New color scheme

The black is hard to read on a beamer. Also, it has many functionalities that are not too obvious, so I haven't found them while using it for the first or second time.

That you have to install Remco's extensions and students making their own names thus messing with the system

Typing the question

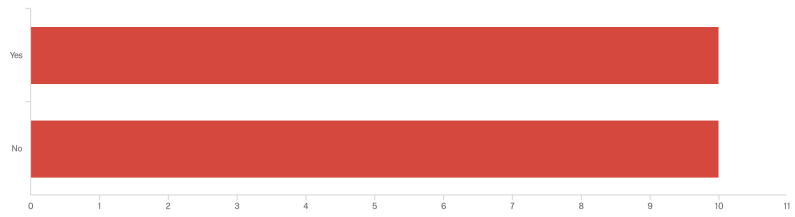
The design (including the part of the students) and the fact that I only get a notification if someone is added to an empty list. The option to get a notification on every entry would be much appreciated (which is something I forgot to mention before)

colours

amount of menus

.

Q8 - Do you have recommendations for improvement or features that you would like to see added to the site?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Do you have recommendations for improvement or features that you would like to see added to the site?	1,00	2,00	1,50	0,50	0,25	20














#	Field	Choice Count
1	Yes	50,00% 10
2	No	50,00% 10

20

Showing Rows: 1 - 3 Of 3



## Q9 - What recommendations or feature suggestions do you have?

- ..Pass on a question 
- ..Multiple exercise entry 
- ..Room statistics 
- ..Filtering or sorting que 
- ..Room statistics  
- ..Notification settings 
- ..Dismiss announcemen 
- ..Filtering or sorting que 
- ..Beamer 
- ..Room statistics 
- ..Freezing list 
- ..Priority lists 

What recommendations or feature suggestions do you have?

When one Ta helps someone but does not know the answer a function so that you can pass this question on to another ta.

Remove the question categories, allow adding multiple question numbers in one request

See TA-help.me extensions by Remco de Man

Again, add sorting / filtering features :) Maybe change the gradient colours a bit. It looks a bit old fashioned. Perhaps use an existing theme like Material Design?

- Add room statistics - Add better notifications - Fix bugs related to announcements

Sorting of tags (e.g. weeks)

It would be great if the site was more easily readable on a beamer screen

none

Room statistics Freezing rooms (where students cannot add themselves to the lists anymore)

Split up the sign off per week

**End of Report**