UNIVERSITY OF TWENTE.

Master thesis

FROM TEACHERS TO SCHOOLS: SCALING-UP PROFESSIONAL DEVELOPMENT FOR ASSESSMENT FOR LEARNING

FACULTY OF BEHAVIOURAL, MANAGEMENT AND SOCIAL SCIENCES

Keywords

Large scale teacher professional development, assessment for learning, secondary school, blended learning

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Content

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Summary

Assessment for learning (AfL), a form of formative assessment, is used to accommodate students' educational needs and to initiate, shape and optimize students' learning processes. There is a considerable amount of room for teachers to improve their knowledge, skills and attitude with regard to AfL (e.g. Bennett, 2011; Kippers et al., 2018; Wolterinck et al., 2016). Through professional development, teachers can improve these competences. A professional development program about AfL for secondary school teachers already exists, The InformED-program. The goal of this research project was to scale up this development program and evaluate it. For this purpose, two central research questions were formulated:

1. How can we scale-up a professional development program (The InformED-program)?,
2. What is the quality of the scalable program in terms of relevance, consistency, expected usability and expected effectivity?

This research design was based on the generic model for educational research design (Mckenney & Reeves, 2012). Interviews with experts and teachers and a document-analysis were conducted to get insight into the first research question. Data from these interviews and document-analysis led to a skeleton design, a global scheme for all sessions, and one elaborated session. The quality of the program (research question two) was measured through interviews with one expert and teachers. With this research, several indicators were mentioned that are important to make a professional development program scalable. These insights can be used for other professional development programs that limits scalability. The indicators are:

- The first session is an offline session.
- There should be an ICT-session to learn about and practice with the ICT-tools.
- There should be a lot of good interaction during the online sessions.
- It should be a hands-on program.
- The first session should be filled with good resources, links, examples, questions, etcetera.

1. Introduction

The importance of assessment, and improving the quality of testing and examination, in education has recently received more attention (Education Council, 2018b). Despite this the Dutch Education Council (2018b) stated that tests and assessments are not contributing enough to the quality of education. This is an important topic of debate for the Education Council. The debate is not about the importance of assessment - about which there is a general consensus - but about how to improve the effectiveness of these assessments.

The Education Council (2018a) has advised the central government to put greater emphasis on assessment in professionalization programs. Specifically, the Educational Council has advised to strengthen the formative function of assessment. Assessment for learning (AfL), a form of formative assessment, can be used to accommodate students' educational needs, and to initiate, shape, and optimize the students' learning process (Van der Kleij, Vermeulen, Schildkamp, & Eggen, 2015). Unfortunately, the application of AfL is limited (Bennett, 2011; Kippers, Wolterinck, Schildkamp, Poortman, & Visscher, 2018; Wolterinck, Kippers, Schildkamp, & Poortman, 2016).

In different countries, effective programs have been implemented to increase teachers' professional development regarding AfL (e.g., 'the King's-Medway-Oxfordshire Formative Assessment Project' by Black, Harrison, Lee, Marshall, and Wiliam (2004), the program that supports formative assessment with teacher learning communities by Leahy and Wiliam (2012), and the InformED-program by Wolterinck, et al., 2016). The InformED-program by Wolterinck, et al. is a professional development program based on an extensive cognitive task analysis on AfL for secondary school teachers. The program consists of five three-hour sessions. Between the sessions the program includes twenty hours of practical application time during which learning tasks need to be executed in the daily teaching practice. Teachers need to prepare, conduct, evaluate, and film their lessons and work on exercises. With the videos, teachers show their learning progress with regard to their own learning goal. They must give and receive peer-reviews on the videos. Furthermore, these videos are also reviewed by a program facilitator. The results of the study into the effects of the InformED-program show an improvement in teachers' knowledge, skills, and attitudes regarding AfL. Moreover, teachers were content with the relevance and usability of the program.

However, the above-mentioned projects regarding AfL have a relatively low number of participants (range between 12 and 112 teachers) and therefore do not constitute a systemic change. Through scaling up, more teachers could be reached to learn about AfL. Scaling up any program can prove to be a challenge due to the necessary intensive guidance by several expert facilitators. For example, the need to continuously review the received videos from every teacher. Moreover, professional development takes time and effort, and strains teachers' already mostly overburdened schedules. Although there is a need to build teachers' capacity to AfL, it is also important that time, effort, and scarce resources are spent only on quality programs that teach with and about best practices (Dede, Ketelhut, Whitehouse, Breit, & McCloskey, 2009) whereby continuous maintenance of new knowledge is key. Accordingly, Dede, Ketelhut, Whitehouse, Breit, and McCloskey, (2008), and Holmes, Polhemus, and Jennings (2005) stated that basing professional development on only face-to-face activities limits scalability and sustainability. These are important considerations that need to be taken into account when aiming to maximize the impact of such programs. The need for online professional development which fits with teachers' busy schedules and that draws on powerful resources (high quality videos and examples for instance) has stimulated the scale up of the professional development program concerning AfL. The research goal for this study was to design a scalable professional development program (the InformED-program) about AfL for secondary school teachers.

This study aimed to redesign the InformED-program so that a larger group of secondary school teachers are able to gain access to the program. For this research, the existing InformED-program were analysed with regard to the possibilities for scaling-up the program. Additionally, to complement the scale-up analysis, interviews with experts and secondary school teachers were used. These interviews gave insight into how to scale up the existing program. After the redesign of the InformED-program a prototype of the scaled-up professional development session(s) of the AfL is made and formatively evaluated.

2. Theoretical Framework

2.1 Assessment for learning

The importance of assessment in education has received considerable attention in recent years. There are high expectations from the Education Council with regard to examination and assessment in education, politics and the society (Education Council, 2018b). Examinations and assessments must be of outstanding quality since they are fundamental in making important decisions about students' future (Education Council, 2018b). With the term 'assessment', Black and Wiliam (1998) refer to all kinds of activities undertaken by teachers, and by their learners when assessing themselves, that provide information (evidence) that can be used to modify teaching and learning activities. When the information is combined with classroom practice to accommodate teaching that meets learners' needs, assessment becomes formative. Examples are: observations in the classroom, the use of portfolios and rubrics, teacher-, peer-, and self-feedback (Sluijsmans, Joosten-ten Brinke, & Van der Vleuten, 2013).

Formative assessment is a general term and three forms can be distinguished (Van der Kleij et al., 2015):

1. data-based decision making;
2. diagnostic assessment;
3. AfL.

Data-based decision making is the systematic collection, analysis, and interpretation of data in order to improve education (Schildkamp & Kuiper, 2010). Diagnostic testing involves collecting detailed information about the learning process of individual learners (Van der Kleij et al., 2015). This study will focus on AfL. Broadfoot et al. (2002) define AfL as ''the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to go and how best to get there'' (Broadfoot et al. pp. 2–3). Another authoritative definition from the term comes from Wiliam (2014) who states that AfL is any assessment for which the first priority in its design and practice is to serve the purpose of promoting learners' learning. Other definitions, for example by Black et al., 2004 and Wiliam, 2011, emphasize the same purpose. With AfL, the quality of the learning process during daily practice can frequently be monitored by using information from mostly qualitative assessments such as informal classroom observations, discussions and interviews

with learners (Kippers, et al., 2018). Kippers, et al. add that learners play a central role in the learning process and that they, together with the teachers, are responsible for their own learning process.

This study uses the definition proposed by Broadfoot et al. because it is the most accepted, specific and comprehensive definition (e.g. in Abbasnasab, 2013; Tan, 2017; Wiliam, 2014). The definition provides information about how to implement AfL in practice. In line with this definition, Leahy, Lyon, Thompson, and Wiliam (2005) propose that formative assessment could be conceptualized as the result of crossing three processes (where the learner is going, where the learner is right now, and how to get there) with three kinds of agents in the classroom (teacher, peer, learner), as shown in Table 1. These agents can realize AfL. This leads to five core strategies that should always be applied (see Table 1 below for a summary of these five core strategies).

Gulikers and Baartman (2017) designed a formative assessment cycle (see Figure 1). The five phases concretize what teachers should do in class when they follow the process of AfL.

Although the benefits of AfL are clear, research shows that the implementation of AfL is often ineffective (Bennett, 2011). As mentioned before, teachers' competences (knowledge, skills and attitude) concerning AfL offers considerable room for improvement (Bennett, 2011; Kippers et al., 2018; Wolterinck et al., 2016). For this reason, professional development is needed (Heitink, Van der Kleij, Veldkamp, & Schildkamp, 2016).

Table 1

Five Key Strategies of Formative Assessment (Wiliam & Thompson, 2008, p. 15-16)

<table>
<tr><th></th><th>Where the learner is going</th><th>Where the learner is now</th><th>How to get there</th></tr>
<tr><td>Teacher</td><td rowspan="3">Clarifying, sharing, and understanding learning intentions and success criteria</td><td>Engineering effective discussions, tasks, and activities that elicit evidence of learning</td><td>Providing feedback that moves learning forward</td></tr>
<tr><td>Peer</td><td colspan="2">Activating students as learning resources for one another</td></tr>
<tr><td>Learner</td><td colspan="2">Activating students as owners of their own learning</td></tr>
</table>

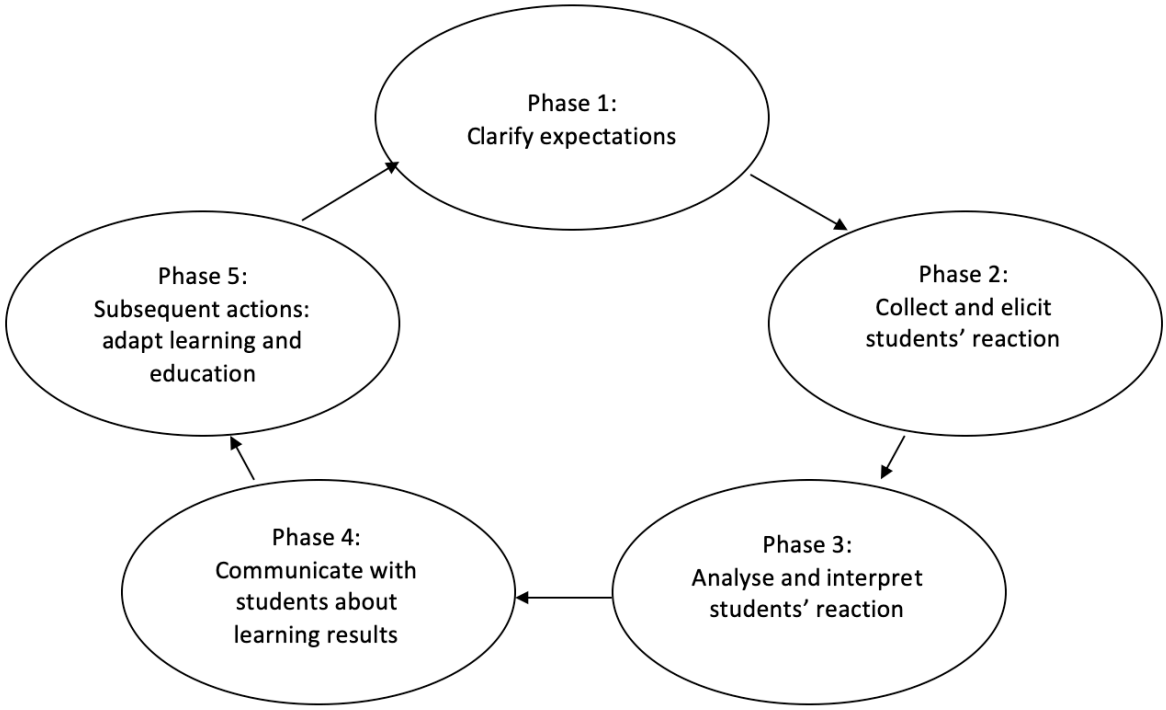


Figure 1. AfL-cycle Gulikers and Baartman (2017), p. 13[1].

2.2 Professional development

High-quality professional development is a central component in nearly every modern proposal for improving education (Guskey, 2002). Increasing high-quality professional development ensures that all teachers are able to meet the needs of diverse learner populations (e.g., Desimone, 2009; Kools & Stoll, 2016; Van Veen, Zwart, Meirink, & Verloop, 2010). Guskey (2002, p. 2) defined professional development programs as "systematic efforts to bring about change in the classroom practices of teachers, in their attitudes and beliefs, and in the learning outcomes of learners". Good education requires teachers to develop continuously, also during their careers (Hattie, 2009; Kendall & Marzano, 2008). The Education Council (2018a) stated that teachers must respond to social developments, keep up with pedagogical and professional knowledge development and deal with increasing learner diversity and the changing role of parents. Moreover, teachers are role models for their learners when it comes to learning and developing. Teachers who are stimulated to develop professionally experience consider their work as more attractive than teachers who are not stimulated to develop (Education Council, 2018a). Annually every teacher in the Netherlands

[1] Translated in English

has 83 hours of professional development time. Furthermore, they are allocated a yearly budget of 600 euros (secondary education) to invest in their professional development (Education Council, 2018a).

Darling-Hammond, Hyler, and Gardner (2017) described several indicators for effective teacher professional development. Effective professional developed:

1. is content focused;
2. incorporates active learning;
3. supports collaboration;
4. uses models of effective practice;
5. provides coaching and expert support;
6. offers feedback and reflection;
7. is of sustained duration: professional development that is sustained may lead to many more hours of learning than is indicated by seat time alone. So, there must be learning over time, both within and between sessions.

Effective professional development evaluations require the collection and analysis of different levels of information. Kirkpatrick (1996) has drafted the following levels (see also Desimone, 2011; Guskey, 2002):

1. participants' reaction/satisfaction;
2. participants' learning;
3. organization support and change;
4. participants' use of new knowledge and skills;
5. student learning outcomes.

2.2.1 Scalable professional development

Basing professional development on only face-to-face activities limits scalability and sustainability. These are important considerations in maximizing the impact of the professional development and the grant funding (Dede et al., 2008; Holmes, Polhemus, & Jennings, 2005). Dekker and Feijs (2005) discussed a number of results of the larger study: the Classroom Assessment as a basis for Teacher Change (CATCH) project. CATCH was meant to develop, apply and scale up a professional development program designed to bring about changes in teachers' instruction for their learners by helping them change their formative assessment practices. For the design, they summed up three indicators to scale up a

frequently used professional development program (for example in Carless, 2012; Suurtamm, Koch, & Arden, 2010; Volante & Beckett, 2011). These three indicators are:

1. transfer to other curriculum areas;
2. transfer to a larger group of teachers;
3. transfer to other grade levels.

Coburn (2003) developed a concept of 'scale' that requires reform that not only reaches more widely but also more deeply into schools to affect and sustain consequential change. Coburn proposed that the nature of change takes center stage in conceptualizations of scale. This concept has four interrelated dimensions: depth, sustainability, spread, and shift in reform ownership. This concept of scale is clear and frequently used, for example in Mathews, McIntosh, Frank, & May, 2014; Mckenney & Reeves, 2012; Kim, et al., 2017. These dimensions are described below.

Depth

The first dimension, depth, means that reforms must affect deep and consequential change in classroom practice (Coburn, 2003). Professional development should alter teachers' beliefs, norms of social interaction, and pedagogical principles as enacted in the curriculum. Enacted curriculum is the way that students and teachers engage with materials or activities over time. Coburn specified teachers' beliefs as their underlying assumptions about how students learn, the nature of the subject matter, expectations for students, and what constitutes effective instruction. With the term norms of social interaction Coburn refers to teacher and learner roles in the classroom, patterns of teachers and student vocal interaction, and the manner in which teachers and students treat one another. Depth also involves changes in underlying pedagogical principals embodied in the enacted curriculum. It is important to look beyond the presence or absence of these materials or tasks to the underlying pedagogical principles embodied in the way teachers engage students in using these materials and tasks.

Sustainability

Coburn (2003) next took up the idea of sustainability, which she defined as the idea of consequential change sustained over time. Distribution and adaption of a professional development program is only significant if its use can be sustainably copied from the from one (the first) school to subsequent schools. Therefore, schools should be provided with tools, especially after initial allocation of implementation resources disappears. Teachers are better

able to sustain change when there are mechanisms in place at multiple levels of the system to support their efforts. This involves support from the professional community of colleagues who reinforce normative changes and provide continuing opportunities to learn, and knowledge, backing and support from the school leadership. Mckenney & Reeves (2012) called it sustained maintenance and referred to efforts required to continue, or at least attempt to sustain, an intervention with little to no external support. Sustained maintenance boosts both the ecological validity and the relevance of the intervention.

Spread

The third indicator to consider when analyzing scalability is spread. This concept involves the spread of activity structures, materials, and classroom organization together with underlying beliefs, norms, and principles to additional classrooms and schools (Coburn, 2003). Next to expanding outward to more schools and classrooms, the potential to spread reform-related norms and pedagogical principles within a classroom, school, and district are also included. A transfer should be made to other curriculum areas, to a larger group of teachers and to other grade levels. For this concept, the before-mentioned indicators from Dekker and Feijs (2005) are used, since they are more concrete: (1) transfer to other curriculum area, (2) transfer to a larger group of teachers, (3) and transfer to other grade levels.

Shift in reform ownership

Finally, teachers' ownership is an important aspect of scale. This means that the professional development should no longer be controlled by a reformer, but districts, schools, and teachers should have the capacity to keep, spread, and learn about AfL. Teachers, schools, and in some cases districts, should be responsible to enact and sustain professional development so a difference is made for the learners. A key component of scaling reform is by creating conditions that shift authority and knowledge of the professional development from external actors to teachers, schools, and districts. In other words: there must be a shift from external to internal. Practitioners should collaborate early and set goals in collaboration to help minimize the impact of this challenging shift (Coburn, 2003; Mckenney & Reeves, 2012).

For this research, the three indicators form Dekker and Feijs (2005) and the four from Coburn (2003) were used for the concept 'scale'. There is little overlap between some of these indicators (e.g. transfer to a larger group and spread). Actually, the indicators from Coburn are more in-depth in general.

2.3 Design principles

Next to scalability, some design principles are important for the design of the program. The spider web (see Figure 2) can be used in educational design research to increase the quality of curriculum design and development (Van den Akker, 2007).

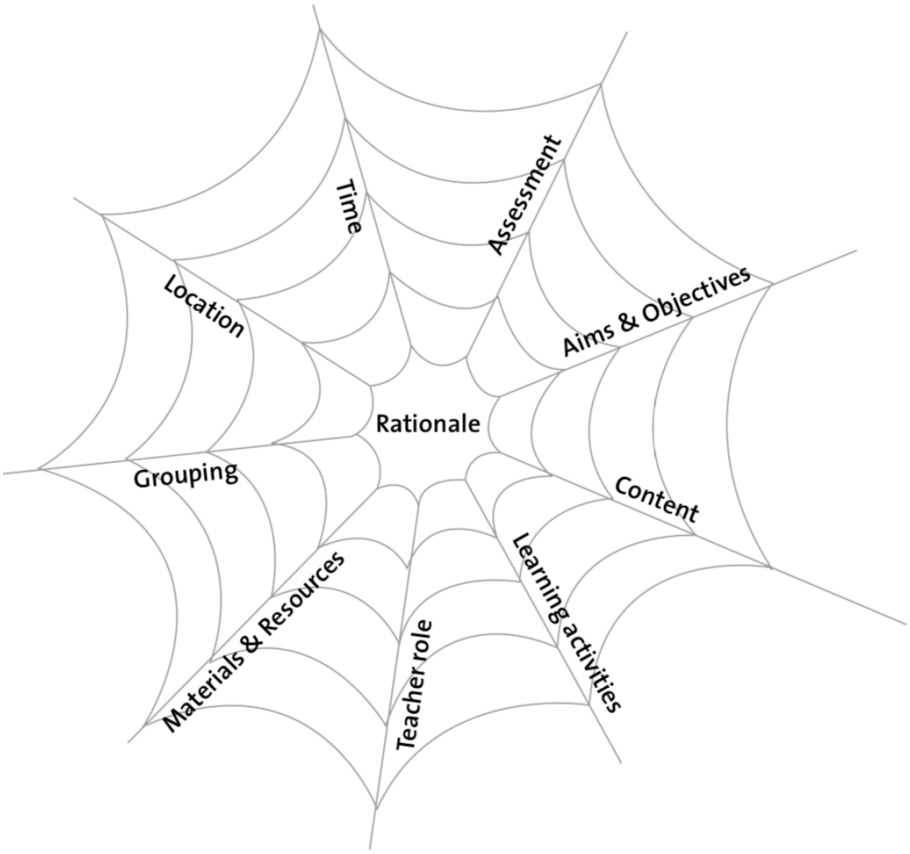


Figure 2. Curriculair spider web. Van den Akker (2007), p. 41.

This web is used frequently (e.g. in Adams, Rotsaert, Schellens, & Valcke, 2020; Nieveen, Van der Hoeven, Ten Voorde, Koopmans, Van Lanschot Hubrecht, 2013; Sabzian, Ismail, Z., Ismail, & Vajargah, 2013). All ten components of a curriculum and the connections between the components should be considered when a school wants a successful and sustainable implementation into various curriculum representations (Stichting Leerplan Ontwikkeling, 2019; Van den Akker, 2007). These components of the spider web are all linked with each other, with the rationale as the linking pin. This leads to consistency and coherence (Stichting Leerplan Ontwikkeling). These components address ten specific questions about the planning of learning that should be considered in the design of a professional development program. Not all aspects from the spider web need to be described anew in the design of this new program, since the content of the program was already established (e.g. content, aims &

objectives). Some are already covered with the indicators from Coburn (e.g. materials, resources, and location). This means that learning activities, time, and grouping are explicitly addressed for the current research. Time is divided into three categories: (1) duration, (2) amount of sessions, (3) day of preference, and (4) time of preference.

2.4 Form of delivery

Technology can support scaling up a professional development program in a range of ways. It allows us to do more with less, such as provide video feedback to students who traditionally received written comments, without requiring more staff time (Carless, Bridges, Chan, & Glofcheski, 2017). Two options are available to scale up the InformED-program and are related to the component 'location' in Van den Akkers (2003) spider web.

The first way to scale up is through developing an online program. Russell, Carey, Kleiman, & Venable (2009) conducted a study to compare face-to-face with online professional development. They mentioned several advantages of online professional development. First, in an online program, teachers have more flexibility and greater choice as to when they participate and engage in learning. Second, teachers who work in remote areas or small schools can also gain access to professional development courses that would otherwise be expensive or impractical to deliver face-to-face. Additionally, it is also easier to connect teachers across schools and districts, thus, widening perspectives and fostering professional connections that would not occur otherwise. Furthermore, when discussions are used in online learning, teachers can contribute to the discussions whenever they want. Finally, Dede, et al. (2009) summed several advantages of professional development such as fitting teachers' schedules, drawing on powerful non-local resources, opportunity for asynchronous reflection, and increased contributions by participants who might be quiet in face-to-face environments. However, there are also challenges concerning online professional development. Firstly, there may not always be a teacher or expert available to reply to the online discussions (Belland, Burdo, & Gu, 2015). Moreover, not all teachers are comfortable with technology (Holmes, Polhemus, & Jennings, 2005). Teachers may not participate much in online activities when the professional development is too flexible (Owston, Wideman, Murphy, & Lupshenyuk, 2008). This means that the freedom to organize your own time should be limited.

The second option to scale up a program is through blended learning. Blended learning is a combination of face-to-face and online learning. It is a way to improve scalability and sustainability (Belland, Burdo, & Gu, 2015; Yurtseven, O'Dwyver, & Lawson, 2020). According to Owston et al. (2008) blended programs can support teachers' ongoing dialogue with experts or colleagues. Moreover, blended programs tend to be more cost-effective than face-to-face models (Dede, Eisenkraft, Frumin, & Hartley, 2016; Owston et al.). They offer teachers and schools more independence compared to face-to-face learning (Holmes, Polhemus, & Jennings, 2005). In addition, blended learning can fit into teachers' busy schedules since it offers more flexibility to teachers. Moreover, some of the learning can take place at scheduled face-to-face while other parts may occur online at their convenience (Owston et al.).

Yurtseven et al. (2020) concluded that blended learning can be equally effective and more cost-effective than face-to-face learning, as long as the online component is clearly integrated with the face-to-face component. Compared to online learning, with blended learning teachers can apply techniques in their classrooms as they are learning (Owston et al.). Moreover, this method integrates face to face components into online experiences that are intended to strengthen the social cohesion of a learning community (Owston et al.)

Boelens, De Wever, & Voet (2017) described four key challenges with blended learning:

1. Incorporating flexibility - here designers should think about the sequence and proportion of online and face-to-face activities. Designers should also decide whether the teachers have control over decisions whether to acquire or complete activities online or face-to-face.
2. Stimulating interaction - online interaction is often considered to be less spontaneous compared to face-to-face communication (Osguthorpe & Graham, 2003). A face-to-face introductory meeting appears to be a promising approach to stimulating interaction, as previous research in the domain of distance education shows that an introductory face-to-face meeting can facilitate the formation of informal study groups, and help students to become part of the social life of the school (Rovai, 2003).
3. Facilitating teachers' learning process - fostering an effective learning climate means that there should be an effective and safe learning climate, with plenty of opportunities for social interaction.
4. Fostering an effective learning climate - it becomes clear that the face-to-face and online components of blended learning environments are generally used for different

purposes. On the one hand, introductory face-to-face meetings are often implemented to provide students with organizational information, to clarify expectations, and to explain the used technologies. This use of face-to-face meetings is also stressed in previous research (e.g. McDonald, 2014), which finds that learners value an initial orientation session to introduce the course and familiarize themselves with the technology and tools (Boelens, et al., 2017).

An overview of the concepts and indicators of the theoretical framework that will be used for the design can be found in Figure 3.

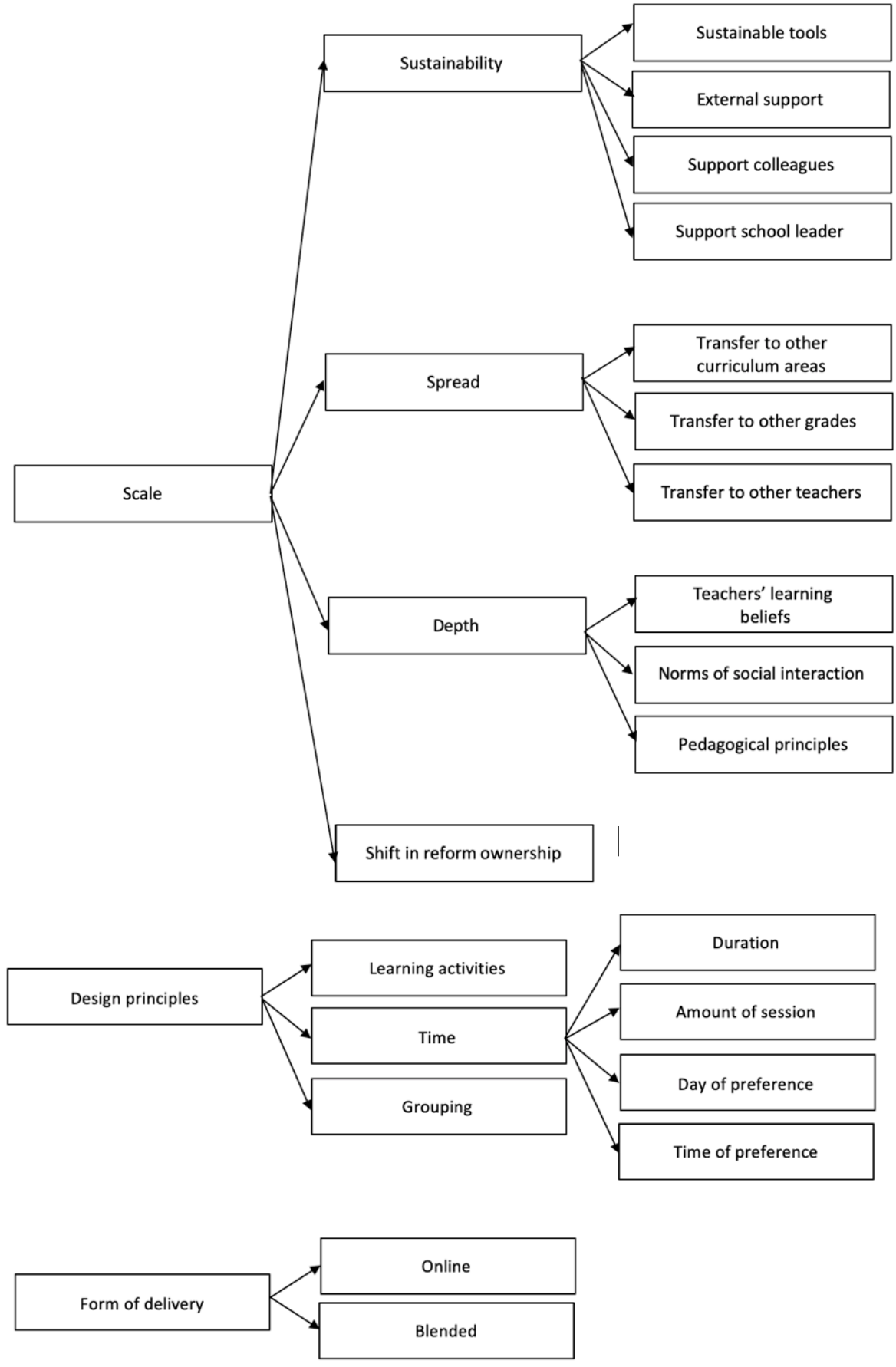


Figure 3. Overview theoretical framework.

3. Research questions

This study creates a design that is relevant for theory, research and practice. This will, for example, allow researchers to build on this study by evaluating it on a larger scale. The InformED-program involves a group of 45 teachers. Wolterinck, Poortman, Schildkamp, and Visscher (submitted) concluded that the context for future programs might differ. They point out the need for a larger scale and more representative study into AfL in teaching practice. Furthermore, according to Wylie et al. (2008) the challenge is to develop models of professional development and scalable systems of delivery that are devoted to the dissemination of the content of AfL, while also providing sustained, meaningful assistance to teachers who are attempting to replace long-standing habituated practices with more effective ones. In line with this reasoning, Thompson and Goe (2009) suggested the possibility to increase scalability with an existing program, but point out that this cannot be done overnight. An iterative research and development process are needed that provides opportunities to adjust and then test, and allows for time to develop and allocate new resources.

The need for a larger-scale into AfL in teaching practice and their challenges has led to the following two main questions:

1. How can we scale-up a professional development program such as the InformED-program?
2. What is the quality of the scalable program in terms of relevance, consistency, expected usability and expected effectivity?

4. Method

4.1 Research design

This study uses an educational design research approach as the foundation of the research method (Mckenney & Reeves, 2012). Mckenney and Reeves distinguished three phases in this type of research: (1) analysis and exploration, (2) design and construction, and (3) evaluation and reflection. An overview of the phases and activities for this study can be found in Table 2.

Table 2

Overview questions, phases, activities, and tasks

RQ	Phase	Processes	Tasks
RQ1	Exploration and analysis phase	Initial orientation	Conversations teachers
		Literature review	Peer reviewed empirical studies
			Document-analysis from InformED-program and meeting with expert E
		Field investigation	Group interviews teachers
			Interviews experts
RQ1	Design and construction phase		Morphological chart
			Skeleton design
RQ2	Evaluation and reflection phase		Evaluation initial design with interviews teachers and expert
RQ2			Final design

The exploration and analysis phase consists of three processes: (1) initial orientation, (2) literature review, and (3) field based investigation. For the initial orientation informal conversations with teachers were held about their experiences with AfL and their opinions. In the same phase, the literature review was conducted. During the literature review peer-reviewed empirical studies from the past ten years about online/blended programs were analysed to gain insight into the scalability of the redesign of the InformED-program. Then, a document analysis was conducted to get insights in how to scale up the existing InformED-program. For the document-analysis, the sessions from the InformED-program were analysed. Besides, the videos that were used during these sessions were reviewed. Additionally, a meeting with an expert (expert E) about AfL and professional development was analysed. She is an internationally recognized expert in formative assessment, a consultant in education and a senior advisor. After that, codes were derived from the theoretical framework and the document analysis. During the field investigation, (group) interviews with experts and

secondary school teachers were used to get insights in their opinions about how to scale-up an existing program. These interviews and the document-analysis were analysed with the codes that derived from the theoretical framework.

In the design and construction phase, results from the interviews and document-analysis were summarized. Thereafter, design requirements and propositions led to a conclusion of the preliminary investigation. After that, a morphological chart was created. It is helpful when taking big ideas and operationalizing into specifics (Mckenney & Reeves, 2012). A skeleton design, a global scheme, and one elaborated session were subsequently created.

To answer the second research question, for the evaluation and reflection phase; ‘‘What is the quality of the scalable program in terms of relevance, consistency, expected usability and expected effectivity?’’, an evaluation with one expert in the field of AfL and professional development and two teachers was conducted. In these evaluation interviews the skeleton design, the global scheme, and one session of the program were evaluated. The quality of the design was measured with components from the matchboard from SLO (Nieveen, Folmer, & Vliegen, 2012). The interviews focused on four components from the matchboard: (1) relevance, (2) consistency, (3) expected usability, and (4) expected effectivity. These components can be related to the five indicators from Kirkpatrick (see p. 11). Participants reaction/satisfaction (indicator 1) can be related to all four components from the matchboard. Participants’ learning (indicator 2), organization support and change (indicator 3), participants’ use of new knowledge and skills (indicator 4) and student learning outcomes (indicator 5) are in line with the component expected effectivity. The interviews with the expert and teachers were individual, because of their varying yet specific areas of expertise and their busy schedules. This was done to generate, connect and refine design ideas. This led to new design requirements and propositions. These were taken into account while creating the final design.

4.2 Respondents

Before collecting data from the respondents, approval from the Ethics Committee was asked and granted (request number 200944).

Teachers of the secondary schools participating in the study were approached by e-mail and informed of the content and ethical considerations of the study. Prior to the study,

participants were informed about the details of the study and asked to confirm participation by signing a consent form (see Appendix E). Data derived from the study was analysed anonymously.

Group interviews with teachers preliminary investigation

To answer the first research question, group interviews with teachers were conducted. Two groups of teachers were made; both groups consisted of teachers from secondary schools in the Netherlands. One teacher from every school was called with the question to participate in this study. They, in turn, asked their colleagues to participate. From the first group, there was one English teacher, a chemistry teacher, and a history teacher. The English teacher reported little experience with AfL and the others reported no experience. The second group consisted of a Dutch teacher, a biology teacher, a physics teacher and a mathematics teacher. All four had no experiences with assessment for learning. Their teaching experience varied from 16 to 41 years. Their input was used to get insights in how to scale-up an existing program.

Interview experts preliminary investigation

Interviews with experts were also conducted to answer the first research question about how to scale up a professional learning program. Four experts in the field of teacher professional development and/or AfL were part of the expert group. One expert (expert A) was facilitator at the InformED-program and has a lot of experience and expertise with AfL. Expert A is a curriculum developer for Modern Foreign Languages at an institute for curriculum development in the Netherlands. Moreover, he is project leader professionalization formative assessment in secondary education. The second expert (expert B) is also a curriculum developer Language at an institute for curriculum development in the Netherlands. Expert B coaches teachers with formative assessment. The third expert (expert C) is an associate professor at a university of applied sciences in the Netherlands. Expert C works within the vocational education lectorate on research projects on assessment issues in vocational education, with programmatic and formative assessment as important points of attention. The last expert (expert D) is an assistant professor at a university in the Netherlands. Expert D has expertise in formative assessment and (teacher) professional development that provide us with more knowledge and practical expertise in using assessment to stimulate and motivate student learning.

Interview evaluation

To answer the second research question interviews with two teachers and an expert (expert A) were conducted by using the matchboard from SLO (Nieveen, Folmer, & Vliegen, 2012) (see p. 21). These teachers and expert were part of the preliminary investigation too.

4.3 Instrumentation

4.3.1 Interviews

Group interview teachers preliminary investigation

The interview schemes (see Appendix A) were identical for the teachers from the two different schools. To answer research question one, questions were focused on experiences with online and blended learning platforms. An example question is 'What online platforms did you already use?'. The interviews were based on concepts from the theoretical framework. To illustrate, the indicators from Dekker and Feijs (2005) and the indicators for effectivity (Kirkpatrick, 1996) were used and were presented on a slide (see Appendix B). The indicators form Coburn (2003) were not explained. When it was too complex for teachers to answer the question about how to scale up a program, the indicators from Coburn were inserted. Specific questions about scalability were asked by using these indicators. To illustrate, a question 'What external support is needed to make an effective, scalable professional development program?'. Additionally, two examples (one blended program and a MOOC) were described and teachers were asked to talk about their preferences. Moreover, teachers were asked to give their opinion about the advantages and disadvantages of online/blended learning.

Complementary interview slides

To clarify the term AfL and to explain effective and scalable professional development, slides were prepared to aid the interviews. For example, when the question 'What is AfL for you?' was asked, a slide with the definition from Broadfoot et al. (2002) and the table with the five key strategies of formative assessment from Wiliam & Thompson (2008) was presented after participants' answers. The other slides contained information about sustainability and effectivity. The slides can be found in Appendix B.

Interview experts preliminary investigation

To answer research question one, questions about a specific online learning platform and their experiences with it were asked about. Furthermore, their opinion about the relevance of up-scaling the program was asked about. Following the questions, the theoretical and practical relevance was explained. Next, experts were asked to give their opinion about the best way to scale-up the InformED-program. An example question is: 'What are conditions to make the

online/blended professional development program (the InformED-program) scalable and effective?' The interview scheme with one expert can be found in Appendix C. For these interviews, the before-mentioned slides with the indicators concerning scalability and effectivity were used too.

Interviews evaluation teachers and expert

To measure the quality of the professional development program (research question 2), questions about the relevance, consistency, expected usability, and expected effectivity were asked. These indicators derive from the Matchboard from SLO (Nieveen, et al., 2012). Relevance means that professional development program meets the necessary needs and is based on recent insights. Consistency means that the professional development program is logical. Expected usability can be defined as 'the product is expected to be useful in the situation for which it is intended'. Expected effectivity means that it is expected that working with the product will lead to desired results. An example question about the indicator 'expected usability' is 'To what extent is this program usable on large scale?'. The interviews for the teachers and the expert were the same. The interview scheme is depicted in Appendix D.

4.3.2 Document-analysis

Several documents and videos were analysed to gain deeper insights in the question 'How can we scale-up a professional development program such as the InformED-program?'. First, the existing InformED-program was analysed. To that extent the Powerpoints from these sessions and the blueprint were used. A summary was made from every session and a description is made of what should be changed to make it scalable based on the indicators from Dekker and Feijs (2005) and Coburn (2003). Second, eighteen videos that were showed in the InformED-program were reviewed. Finally, a meeting with expert E about formative assessment and professional development was analysed.

4.4 Procedure

An overview of the procedure is presented in Figure 4.

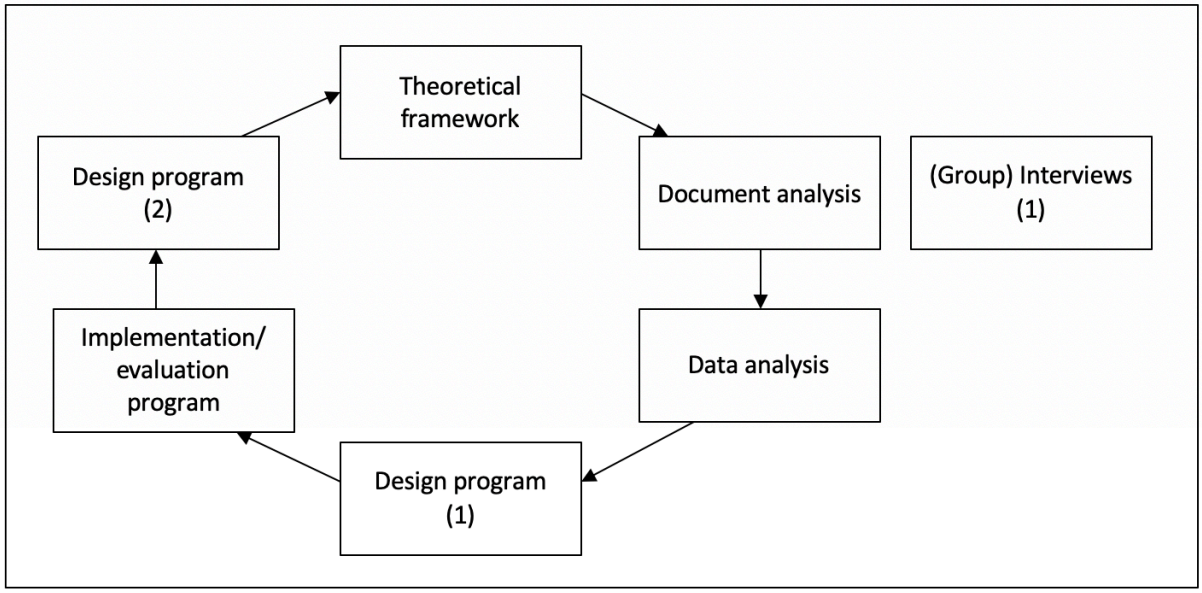


Figure 4. Overview procedure.

4.5 Data analysis

The data generated in this study is qualitative. Codes derived from the theoretical framework (see Figure 3 p. 18 for an overview) are listed in a codebook and are used for the (group) interviews (see Appendix F). Therefore, the deductive coding technique from Strauss & Corbin (1990) was used. The initial data were collected, reported and reviewed line by line, within a paragraph. Beside or below the different paragraphs, categories or labels were generated. Subsequently, audio recordings of the (group) interviews were transcribed verbatim with ATLAS.ti._9.0. To establish the reliability of the interviews, inter-rater agreement was calculated for each of the codes used. A second independent coder coded 10% of the interview fragments. There was a substantial Cohen's Kappa of 0.75.

With regard to the first research question about teachers' and experts' ideas about how to scale up the existing program, codes derived from the theoretical framework. The indicators concerned scalability were based on the indicators from Dekker and Feijs (2005) and Coburn (2003). For instance, codes with sustainability were: (1) sustainable tools, (2) external support, (3) support colleagues, and (4) support school leaders. All these codes are depicted in the last column of Figure 3 (p. 18). After coding the data, a code was selected and a summary was made of all that the teachers and/or experts said during the interview relating to that code. This was done for every code. The quotes from the respondents were translated into English for this study, since all the interviews with both groups were conducted in Dutch.

All the codes are available in the codebook (See Appendix F). Based on the analysis of multiple interviews and the document study, which contributes to greater generalizability, detailed answers were reported to the first research questions (Cohen, Manion, & Morrison, 2013).

To answer the second research question about the quality of the program, interviews with teachers and experts took place. Therefore, the Matchboard from SLO (Nieveen, et al., 2012) was used to evaluate the program. Specific questions about the relevance, consistency, expected usability and expected effectivity were asked. These interviews were recorded and notes were made afterwards. Data that derived from these interviews are ordered based on these categories. All relevant information about these concepts was described in the evaluation.

5. Results

The results are structured with the overview from the theoretical framework (See Figure 3 p. 18). The concepts and indicators in this overview should be taken into account in creating a design. The concepts and indicators are listed below. Nothing is said/written about pedagogical principles, so this indicator is not mentioned in this section. Additionally, duration and amount of sessions are combined in this section. This also applies for the indicators 'day of preference' and 'time of preference', because teachers and the expert spoke about these indicators at the same time. All relevant information that derived from the interviews with teachers and experts and the document-analysis are incorporated and placed under the corresponding indicator. For the document-analysis, the sessions from the InformED-program are analysed. A detailed description of the content and structure of the InformED-program can be found in Appendix H. Moreover, the videos that were used during these sessions were reviewed. Additionally, a meeting with expert E about AfL and professional development was analysed. After the descriptions, design requirements and propositions are listed. Finally, this section contains a morphological chart.

5.1 Summary interviews and document-analysis

5.1.1 Sustainability

Sustainable tools

Expert A was very enthusiastic about the peer-review system used in the InformED-program. It is relatively cheap, the creator is Dutch and the online environment is very user-friendly, easy and effective. Moreover, uploading through a mobile device is easy for teachers. Next to the peer-review system, all teachers and experts have experience with a specific online communication platform. Most of them are positive about that platform. The experts appreciated the break-out rooms in this system. The possibilities are myriad: the addition of slides, a chat functionality, sharing screens and the possibility to make recordings of sessions. Expert A did make a critical note regarding privacy issues. Furthermore, a teacher said that it is hard to see what students are doing when they have muted their microphone and turned off the camera. Google Meets, Zoom, Bright Space and Webex have also been used and experiences with these platforms are similar to Teams. Next to these platforms applications, such as FaceTime and Skype, have been used for conversations in pairs or for small(er) groups.

Expert D spoke about Padlet, a digital bulletin board for sharing content and giving feedback. Unfortunately, in contrast to the peer-review system used in the InformED-program, the capacity is limited.

Two teachers were very positive about videos due to the ease of playback and pause making it easy to take notes. One of them explained that videos can be very useful at the beginning of the learning process. In the existing InformED-program, a lot of videos are included. All these videos are in English with Dutch subtitles. The length of the videos varied from seconds 9 seconds to 5.48 minutes. Most videos are from experts in the field of AfL: David Carles, John Hattie, Royce Sadler, and Dylan William. In line with this reasoning, expert E mentioned that a body of high-quality videos concerning AfL is necessary. In this way, teachers can watch it again on their own pace.

External support

Expert A reported that the quality of feedback from teachers to teachers is still a challenge within the existing program. For this reason, they used a video coach. Additionally, during the session, the facilitators asked questions continuously to monitor progress. Yet, expert C expressed that teachers gave feedback and discussed without experts during an evaluation of the videos. Later on, an expert must be present to steer the process and to answer questions, according to expert C. During their program sessions, example questions to help the discussion were formulated. She added that one facilitator should supervise 4/5 groups with 4/5 teachers at the same time. Expert A watched every video in their professional development program, provided feedback and discussed the videos in the groups. He preferred to watch every video, but also mentioned that it is not necessary to watch every video and that it is not feasible way of working when scaling-up. According to expert D, it is impossible to do a professional development program completely without experts. The number of experts can vary. This should be determined per subject or discipline, according to expert A. In general, expert C advised to involve an ICT-expert for designs of large associated programs. Expert E emphasized that it is essential to have somebody available for troubleshooting during all meetings (e.g. when ICT does not work). In sum, experts that were interviewed mentioned several roles that should be involved in the professional development program: (1) a video coach role, (2) a facilitating role, (3) an ICT role, and (4) a troubleshooting role. It could be that some roles are hold by the same person (e.g. the facilitating and ICT role).

Support colleagues

Expert B emphasized that support from colleagues is important to consider. Teachers who work with the principles of AfL need to establish a dialogue about it with each other. Expert C underlined that too. Working on the program should be done as a team so that experiences can be shared between colleagues. More specifically, in her program, she worked with pairs to share experiences and to discuss these experiences. Some teachers also highlighted the importance of colleague support as a sparring partner. For most of them, it stimulates them to work on the program. Moreover, the barrier to discuss with colleagues is low.

Support school leader

The role of the school leader is important in the program. School leaders play a pivotal role in formulating a schools future vision and ambitions. According to expert B, an expert should convince the school leaders to introduce AfL and the program. The school leaders should share it with their team members (teachers) accordingly and involve everyone, including people who may be apprehensive about, for example, by sharing videos of their skills in class. Expert D described that it can go the other way around: teachers ask their school leaders if it is possible to participate. Expert A stated that they were engaged in the initial session and the third session of the InformED-program. In the existing InformED-program, school leaders had to make a plan about AfL in the school and had to present it to their teachers. A teacher said that the school leaders must make a thoughtful planning with a number of teachers. Input from teachers is necessary to make a logical and convenient planning that, for example, takes into account the timing of the school exams. An important remark from expert E is that 50% dropped-out, because there were no team members at schools, team members did not commit or there was no supportive school member. For this reason, she advised to keep in contact with teachers and school leaders through e-mail. Additionally, expert E also described that there should be a program for school leaders about their role in facilitating AfL that is mandatory. Their role should be explained. These school leaders should have the access to the learning materials too.

5.1.2 Spread

Transfer to other curriculum areas.

Expert A described that some AfL principles are the same for every subject. In his opinion, it is not necessary to make the program subject specific. In the program, differentiation on the

basis of subject can take place. To be more specific, all chemistry teachers can discuss together about a specific question/assignment. Although, according to expert D, participating teachers from her professional development program said that AfL is different per subject. So, they preferred a specific program per subject. In addition to this, it is also possible to start with the professional development program for all Dutch teachers for instance and spread subsequently to teachers from other subjects.

Transfer to other teachers

To make the transfer to other teachers, it is important to follow the program with two or more teachers, according to expert D. In this way, the learning content is actively picked up and sustained by the teachers. Teachers were positive about a so-called snowball effect: teachers who followed the program can become experts and are able to explain and enthuse their colleagues. In this way, scaling up becomes easier. Expert B and expert C came up with the same principle: if you have a sufficient number of expert teachers, they can play a more supportive role after a while, so that they can help their colleagues with their newly gained experience and knowledge.

Transfer to other grade levels

Some experts found it difficult to say something about the possibility to transfer the program to other grade levels. Expert C added that it is a challenge to make the transfer to teachers from different levels because the learning activities in class are very different across grades. To be more specific, a teacher from preparatory vocational education has completely different learning activities in class compared to a pre-university education teacher. Expert D suggested the concept of a pilot class. For example, all teachers that teach a specific class follow the AfL-program. When results and experiences are positive, spread can take place.

5.1.3 Depth

Teachers' learning beliefs

Especially expert A emphasized the need for feedback in the learning process. He also stressed that the principles for feedback are the same for every subject. One teacher stated that there must be a culture in the school where it is normal to step inside colleagues' classrooms. The teacher stated the following: ''Every day we ask our students to be vulnerable yet we remain in our ivory tower and within our own comfort zone". Expert B and expert D described that

teachers should participate actively to learn. When they are unwilling to show their videos, they cannot take part of the program.

Norms of social interaction

Expert A, B, and C, highlighted the importance of interaction. Expert A has experience with interaction and stated that there is more interaction between people who know each other compared with people who do not know each other. He added that it is easier for the experts to address teachers when they are familiar with each other. Expert A and expert B emphasized the importance of dialogues. According to expert B, there must be enough time for the dialogue. Several teachers stressed the advantages of offline interaction. For them, it is important to ask questions and to discuss these. There is a lot of interaction in all meetings in the InformED-program. Teachers discuss, reflect, ask questions, conduct dialogues, play games, give tips, brainstorm and pitch. This is in line with the opinion and experiences from expert E who highlight the importance that there should be teacher interaction; teachers should be active and practice with the content. For example, teachers can watch videos and make notes, ask questions, and reflect.

5.1.4 Shift in reform ownership

According to expert A, teachers with less experience with AfL should have a lot of instruction and guidance during the start of the program, whereas teachers with more experience can do it with little support. He also spoke about the importance of a supportive context. To be more specific, a good working online platform, supportive colleagues and school leaders for instance are essential to make a shift in reform ownership. Expert D is skeptical about the capacity of teachers concerned discussing videos without external support. She is in doubt about teachers' ability to ask critical questions during the feedback- and discussing-sessions.

5.1.5 Design principles

Learning activities

The most important advice from expert E is that teachers should be familiar with the online tools to give feedback to each other. Therefore, there should be a module that focus on how the ICT works. Although, the exisiting InformED-program is offline, no attention is paid to how ICT works, while they work with an online platform to share videos. Actually, the existing program starts with a plenary initial session with a theoretical and practical part about AfL.

Teachers practice individually and make videos, they review videos from other teachers and receive reviews, and they discuss plenary about it after the plenary sessions. Expert A was very positive about this structure. However, more time needs to be invested for teachers to work on improving their videos after the peer-review before the next session. Uploading a new video for one time after the peer-review should be an improvement for the existing program. All experts were enthusiastic about the videos: it takes less time compared to physical class observations, it is a pragmatic tool, the materials are saved and you can look back. Moreover, expert C explained that it is important that teachers work with the learning material actively. Expert B mentioned that submitted learning questions or needs from teachers should be central in the program. Actually, how to do this on a large scale is a challenge. She added that you should be careful with large assignments. The way it is organized with the existing InformED-program is perfect, according to her.

Teachers mentioned that there should be a needs-analysis at the beginning. On the basis of this analysis, teachers can work on specific activities depending on their learning needs. They also described that they want to have a hands-on program. Teachers should be able to apply the learning material immediately. Moreover, it is important that the first session is of outstanding quality with good resources, links, examples, questions, etcetera. This session should explain what to do online and what assignments should be submitted. Teachers' opinions about filming were divergent. Some teachers found it a very effective and valuable tool. On the other side, "The teachers suggested that for some teachers filming would be an obstacle, because they are afraid to see themselves". Although, they said that you will get used to it. One teacher preferred physical class observations, instead of watching videos, because videos are saved.

According to expert E teachers should have access to learning materials in blended programs. In her blended professional learning program, teachers received information about AfL, practiced with it, received and provided feedback from peers, implemented it, reviewed each other together and discussed learning goals. Additionally, they had to make assignments in groups that were clearly structured.

Time

Duration and amount of sessions

The InformED-program consists of an initial session and five follow-up sessions. The program from expert C was five plenary sessions spread throughout the year. That was too little in her

opinion. This could be improved with sessions in groups between these sessions to monitor progress and activities. She also underlined the advice from AfL-expert Dylan Wiliam and colleagues who stated that there must be a minimum of five/six weeks between sessions, so teachers can practice with the learning material. Longer than five/six weeks is not desirable to sustain momentum. This structure is almost the same as the formative assessment cycle. To make an impact, an extended time period is essential, according to expert E. She pointed out that the program should last at least one year.

Day of preference and time of preference

Teachers gave their opinions about the preferred day and time. All teachers preferred the morning. Additionally, all teachers would have these sessions on a study day.[2] The planning is very important for them, as mentioned before. Usually, teachers have a very busy schedule with, for example, exams, parents' counseling, and (classroom)preparation. These sessions should take place in a relatively quiet period. This means that this should not be before holidays and before or after an exam period. For instance, the period between January and March is a relatively quiet period.

Grouping

With the InformED-program, teachers from the same subjects but from different schools worked together. The group composition varies continuously. To illustrate, sometimes they had to discuss with all teachers from the same subject, another time with only a few teachers, sometimes with teachers from all the subjects, or in pairs. Expert A and the participating teachers were positive about it; this worked effectively. In this way, talking about other things (e.g. the school culture and colleagues) would be less likely. Expert B favoured to work in groups with teachers from the same subjects. In contrast to expert A, expert B would prefer that teachers are grouped on the basis of their school to create a formative culture in the whole school. This can start with the whole section immediately or with just a few teachers at the beginning. She added that it is also possible to follow the program with a discipline (for example all teachers from the languages together). Expert C had experience with this kind of grouping. In her program, five to ten teachers from the same subject and school worked together. She planned to exchange information with teachers from different schools; in practice, however, there were logistical difficulties. She concluded that there are several

[2] Studiedag in Dutch

possibilities for grouping. Expert D explained several options: grouping can be based on subject/discipline/school. As described above, a pilot is a possibility in her opinion. Although, there should also be a possibility for teachers from the same subject to spar. All teachers indicated that you should follow the program together. Most teachers believed that the whole school should participate to create a similar mindset for all teachers and learners alike. One teacher said the following about it: ‘‘Doing this individually does not add value for my colleagues and learners. So, when an organization decides to start a professional development program it needs to set a particular direction for the use of the program for the whole organization. Then I think it is valuable.’’ Additionally, teachers highlighted the need for differentiation on the basis of level and previous knowledge. Grouping on the basis of a need-analysis to map teachers’ level and previous knowledge can be an option to realize this.

5.1.6 Form of delivery

Online

Expert E discussed three professional development programs: one online and two blended programs. The third program is the most effective according to expert E, for this reason a more detailed description is given compared to the first and second program (See ‘Blended’ p. 34). The first program, is an online course. The course is available on a website. There were no live or team meetings. Expert E did not go into detail, because it was not successful; there was no impact. According to expert E, there should be a presence, to be able to connect with each other.

The disadvantage with online learning is the temptation to do something else, according to expert C. Advantages with online learning are: you can stay at home, it takes less time, and it has a wider range. One teacher was very negative about online learning due to negative experiences with it. It is tiring for her, reacting is different in an online situation, and she misses non-verbal communication. Everything is very to the point and you stick to the learning content. She has the feeling of missing something. Other teachers were less negative about it. An advantage of online learning is that it is available whenever it suits best, according to a teacher. She also added that optional online sessions should be added, so teachers can determine whether it is necessary to take part or not.

Blended

The second program expert E mentioned is a blended program for a hundred people. The program consists of five modules. There were live and online presentations from a facilitator in Zoom. In Zoom, the chatroom was available. The participants had to prepare work before following the online presentation. After the presentation, participants had live group discussions in the break-out rooms in Zoom. The third program is a hybrid program too. This program is available for 2.000 teachers and consists of five modules and starts with a face-to-face introduction. Expert E described the importance of this live introduction: teachers know the people that are behind the program. After the initial face-to-face introduction all sessions are online.

According to the participating experts the best way to scale up a professional development program is through blended learning. All experts explained that it is important to have the first meeting offline. In this way, you get to know each other, earn their trust, and build a relationship. The peer-review sessions/group meetings should also be offline according to expert A. He described it as follows: ‘‘The abundance of learning is overwhelming, I have not seen that in an online environment.’’ Teachers who participated in this program underlined this experience. Expert A concluded: following the program online is possible after creating a relationship. In line with this reasoning, expert D explained the importance of non-verbal communication in offline peer-feedback sessions. Expert B stated that the learning environment is a fundamental issue. When it is a self-learning module, it is logical that it is online most of the time. Teachers preferred, like the experts, an offline kick-off meeting where experts inspire teachers. One teacher described it as follows: ‘‘And it may be very childish, but if you have looked someone in the eye and someone has given a good, substantive presentation, you are also like, oh, I want to do something for this.’’ This session must be of outstanding quality with good resources, links, examples, questions, etcetera.

5.2 Morphological chart

A morphological chart is used to list solution functions and solution components that have been derived from the interviews and document-analysis (Mckenney & Reeves, 2012). The morphological chart is depicted in Table 3.

Table 3

Morphological chart

Broad propositions	**Mid-level propositions**	**Specific propositions**		
Contains sustainable tools	Beak-out rooms possible	Platform to share videos + possibility for feedback	Platform to share learning materials	High quality videos from InformED-program
	Privacy in the online systems should be guaranteed			
	Contains enough capacity			
	Contains platform for sharing learning material			
	Includes high-quality videos			
Includes external support	High quality interaction and feedback	Facilitator	ICT-expert	Expert for trouble-shooting
	Functionality to ask questions			
	Good ICT			
Foster colleague support	Ability to share experiences with colleagues	Participation with colleagues	Platform to share videos	Platform to share learning materials
Foster school leader support	Supportive, engaged and active school leaders	Access to learning materials	Tailored program	
Spread is possible	Transfer to other curriculum areas, grades and teachers	Sufficient number of teachers	Differen-tiation	
Foster teachers' learning beliefs	Feedback (giving and receiving)	Platform to share videos + possibility for feedback	Commitment	Feedback culture in school
	Willingness to learn and to actively participate			
Foster interaction	Enough time and material for interaction	Observation list for feedback videos		
Is up to shift in reform ownership	Possible to do it without experts after a while	Platform to share learning materials	Supportive colleagues and school leader	
Contains rich learning activities	Teachers should get familiar with ICT	Initial ICT offline session	First live session with good resources	Follow AfL-cycle
	Teachers should work with learning material			
	Good first session			
	Practice what you preach	Hands-on exercises		

Is grouped logically	Varying group composition Possibility to spar with teachers from same subject	Some plenary sessions with whole school	Group sessions with subject specific colleagues	
Has logical time and day	Should fit with teachers' busy schedules	Sessions in the morning	On a seminar day	In a relatively quiet period
Has logical duration and amount of sessions	Minimal five/six weeks between sessions Extended period At least one year	6 plenary sessions a year		
Effective and scalable form of delivery	Online sessions should be available There should be a connection between facilitator-teacher and teachers amongst the teachers themselves Non-verbal communication with feedback sessions	Platform to share learning materials	First offline meeting	Offline feedback-sessions

5.3 Skeleton design

A skeleton design (Table 4) is made to identify core design features and distinguish these from supporting ones (McKenney & Reeves, 2012). The information and reflection forms are depicted in Appendix J.

Table 4

Skeleton design

Design task	**Materials/resources**	**Activities/processes**	**Participation/ Implementation**	**Form of delivery**
ICT-session to learn about and practice with the tools	ICT-Expert; the online bulletin board; the peer-review system used in the InformED-program	Commitment is made; practice with peer-review system and the online bulletin board	All teachers, plenary	Offline
Initial session	Facilitator High quality videos	Structure of program; information about AfL; watch videos +	All teachers and school leaders, plenary	Offline

		answer question; reflect on learning practice		
Session school leaders	Facilitator	Structure of the program; information about activities trainers; assignment explanation	All school leaders	Offline
Follow-up sessions	Facilitator and 1 expert available for trouble shooting	Information about AfL-cycle; explanation activities group meetings	All teachers (in session 3 school leaders too)	Online
Meetings in groups	1 expert available for trouble shooting; videos; observation form; reflection form	Share videos + motivate; fill in observation form; give + receive feedback; reflect on learning goals	Teachers in groups	Offline

5.4 Initial design

An overall scheme with the topic, subtopics and form of delivery of all session is presented in Table 5.

Table 5

Overall scheme sessions

Session	**Topic**	**Subtopics**	**Form of delivery**
ICT-session	Learn tools	- Learn how the peer-review system works - Learn how the online bulletin board works	Offline
1a (teachers)	Introduction	- Meet each other - Commitment is made - Structure of program - Expectations	Offline
1b (school leaders)	Introduction	- Structure of program - Explanation of activities teachers - Get information about formative assessment: Formative assessment itself Applying it Conditions for applying	Offline

		- Explanation of assignment: plan in form of a pitch for teachers - Explanation of their role in facilitating AfL	
2 (teachers)	Learning goals and sharing indicators	- Get information about formative assessment Formative assessment itself Models Strategies Learning goals and sharing indicators Exemplars - Watch videos and answer questions about it - Reflect on own learning practice - Get information about sustainability - Get information about group meetings Explanation of observation form For peer-feedback Explanation of reflection form - Explanation video	Online
3 (teachers and school leaders)	Learning goals and sharing indicators	- Recap meeting 2 - Get information about: Learning goals Sharing indicators Collecting information about learning Formal and informal testing - School leaders pitch their plan - Explanation reading material - Explanation of observation and reflection form - Explanation video	Online
4 (teachers)	Collection information	- Recap meeting 3 - Interaction with e.g.: Polls Questions Mentimeter Quiz learning material - Get information about: Collecting information Analyzing learners' learning process Reflecting own acting scaffolding - Explanation reading material - Explanation of observation and reflection form - Explanation vlog	Online
5 (teachers)	Analyzing information and interpreting and stimulating learners' learning process	- Recap meeting 4 - Interaction with: Sharing some vlogs - Get information about Collecting information that is in line with learning goals and indicators	Online

		Reflecting on learning fragments Stimulating learners' learning process Preparing lessons Evaluating lessons Core objectives and final attainment levels Learning progressions Explanation reading material Explanation series of lessons	
6 (teachers)	Setting learning goals	- Recap meeting 5 - Interaction with: Sharing some lesson series Quiz with Socrative - Get information about: Whole AfL-cycle Core objectives and final attainment levels Learning progressions End criteria series of lessons - Explanation exercise group meeting	Online
7 (teachers and school leaders)	Repetition and reflection	- Recap all sessions - Interaction with: Sharing some lesson series Sharing some experiences Time for questions	Online
Group meetings*	Work with learning content	- Share video + motivate fragment - Fill in observation form for two peers - Give and receive feedback - Reflect with reflection form In third group meeting: school leaders are involved and pitch their plan.	Offline

* These group sessions are three weeks after every session.

The second session is worked out as a detailed product. This means that a presentation for this session is elaborated. The second session is chosen because the first session should be offline and does not differ from the existing program. The PowerPoint slides of this session are depicted in Appendix I. The other sessions of the professional development program still have to be finished.

5.5 Evaluation

Two teachers and one expert were interviewed for the evaluation of the skeleton design, the overall scheme and the second, fully elaborated online session. These teachers and expert had participated in the interviews in the preliminary investigation too.

5.5.1 Relevance

The first question was about the relevance of the professional development program. This means that the program should meet the learning needs and should be based on recent insights. Expert A had conducted a needs-assessment with the participants of the InformED-program before starting with the program. The needs were the same for every group and every teacher was content with the program every time. In his opinion, the approach and method of the newly designed, scalable program is the same as the existing InformED-program, except it uses different tools. So according to him, the program meets the needs. The relevance is high when the program is followed by all teachers in the same school, according to expert A. Actually, this is not always feasible, since not every teacher wants to commit for example. The program is based on recent insights, since it is based on recent data. Teacher A mentioned that the program is very relevant for their school, since teachers' knowledge, skills and attitude concerned AfL could be improved. Currently, most teachers lack in these areas. The learning content is very interesting, according to teacher A. She believed it is worthwhile to follow this professional development program. Teacher B stated that the professional development program definitely meets the learning needs and is based on recent insights. She said the following: ''You can come to our school and sell this program.''

5.5.2 Consistency

The next question was about the consistency of the program. Consistency means that the structure of the program is logical (Nieveen, et al, 2012). Expert A was very positive about this aspect, because the program follows the principles of AfL. Although, expert A was critical about the sequence of the ICT-session. In his opinion, this session should be scheduled after session 1A and 1B. His reason was that the commitment should be made in the first session. Additionally, teachers should know how to use the ICT. This is only possible after the first session where the structure of the program is described. He advised to change the sequence of these sessions in the skeleton design and overall scheme. Expert A highlighted the added

value of the reflections, to make subsequent decisions about the next learning step. Teacher A was also positive about the consistency. Especially the feedback component is extremely valuable and logical, since this is part of the AfL-cycle. He advised to use the observation form that is used in the existing InformED-program for feedback purposes. He made one remark regarding the slide 'Checking learning goals'. The information about the subsequent steps is missing. To be more specific, information about what to do when certain goals are not completed, is missing.

The new skeleton design and overall scheme that were made after the evaluation interview with the expert were shown to both teachers. These teachers found the sequence logical. Teacher B specified that it is logical to first know what must be learned and later on how to work with the learning material. In her opinion the sequence is correct and should not be changed. However, she made a remark about the moments that questions can be asked. In her opinion, it is better to have an extra person available for answering questions in the chat during the sessions. The feasibility of it depends on the number of participants. Some answers can be answered in the chat immediately, while others need to be discussed, by the facilitator, during the plenary sessions. The extra person can steer this process. In this way, urgent questions can be asked immediately and friction and frustration are limited. Additionally, she found the formative working method of the program logical.

5.5.3 Expected usability

The third question was 'to which amount is this program usable on a large scale?'. All the tools (the online bulletin board, the peer-review system used in the InformED-program, and the online communication platform) are very usable, according to expert A. He has experience with the peer-review system and expects that the other tools will be usable too. Expert A recommended an app to pick random teachers for answering questions. Additionally, he added that teachers' prior knowledge can also be charted online through an online bulletin board. Teacher A and B described that the program will only be usable if teachers completely commit. This is still challenging. This means that they should be willing to invest their time and share their videos. There must be clear rules about the commitment that the school leaders and the facilitator have to make that needs to be established. Teacher B concluded that the learning material will be very usable immediately, since teachers practice a lot with the theory.

Indeed, they practice what is preached, since the program is based on the AfL-cycle. Teacher B said that the program will be usable on small scales as well as large scale.

5.5.4 Expected effectivity

To measure the expected effectivity, interviewees were asked to estimate participants' knowledge, skills, and attitude concerning AfL after following the professional development program. Expert A stated, based on their experience with the InformED-program, that participants will have more knowledge about what AfL is and will realise that their initial knowledge is incorrect. Based on the obtained knowledge, participating teachers in his program thought about how to structure students' learning processes. Teachers found it interesting to think about what they want to know about their students and how to get that information. They received tools that can be used for that process and recognised its importance. In the existing program, teachers did not make an improvement video after the discussion and reflection. Actually, it is important to close the AfL-cycle (phase 5) (see Figure 1, p. 10). To be more specific, making improvements corresponds to phase 5: subsequent actions; adapting the learning education. In the new scalable program, teachers have to make at least one new video where they show their improvements of at least one aspect of AfL. Expert A was very positive about that change. Furthermore, this program is most effective when all teachers and school leader(s) of a school follow the program simultaneously, according to him. He mentioned that school leaders should be involved in one group meeting to keep track of teachers process.

Teacher A and B stated that the knowledge will definitely increase after following this professional development program. Currently, the knowledge about AfL at the school from the teachers is lacking. ''Every single teacher will always learn something'', according to teacher B. She also expected that the skills concerning AfL will improve for every teacher, since most teachers never learned about these skills. She expected that the skills regarding AfL will be improved too, since teachers apply the obtained knowledge immediately. She also added that the wide range of examples and the possibility to share best-practices will contribute to its effectivity. Additionally, she expected that the majority of teachers will improve their attitude towards AfL. Nevertheless, she estimated that 10% of the teachers will not change their mind, because they keep on doing what they have always done. Finally, expert B was

positive about teachers' attitude concerning AfL. There are a lot of misconceptions that affect their view on AfL.

To summarise, the undermentioned adaptions were made in the skeleton design, the overall scheme, and the elaborated session.

Skeleton design and overall scheme:

- The sequence of the skeleton design and the overall scheme was changed;
- The information that teachers learn about why the tools explained in the ICT-session are important was added. In the previous version, teachers only learn how to use it, because they had too little information for which it can be used.
- An extra person for answering questions was added;
- School leaders become involved in one group meeting.

Elaborated session:

- An app was added to pick random teachers for answering questions;
- There are no fixed moments to ask questions. At all times questions can be asked in the chat. There is an extra person available to answer these questions in the chat or to channel them back to the facilitator when possible and when there are too many participants;
- Information about what to do when certain learning goals are not completed, was added;
- Teachers' prior knowledge was charted online through an online bulletin board;
- The existing observation form from the existing InformED-program was used.

6. Conclusion

More attention should be paid to AfL and its application to accommodate students' educational needs, and to initiate, shape, and optimize the students' learning process (Kippers et al., 2018; Wolterinck et al., 2016). Wolterinck et al. developed a professional development program for secondary school leaders and teachers to improve their knowledge, skills and attitude concerned AfL. However, this program was accessible for a relatively low number of participants (45 teachers) only. Therefore, the aim of this study was to redesign this program with the goal of making it scalable so that a larger group of secondary school teachers are able to gain access to the program. The two research questions for this study were: ''How can we scale-up a professional development program such as the InformED-program?'' and ''What is the quality of the scalable program in terms of relevance, consistency, expected usability and expected effectivity?''

To answer the first research question, a document-analysis and interviews with several experts and secondary school teachers were conducted to get insights in how to make the existing program scalable. Therefore, indicators concerning scalability from Dekker and Feijs (2005) (transfer to other curriculum, a larger group of teachers, and other grade levels) and Coburn (2003) (sustainability, spread, depth, and shift in reform ownership) were used. Next to these indicators, indicators from Van den Akker (2007) were used for other design principles (learning activities, time, and grouping). These data were analysed and used for the design of the skeleton design, the morphological chart, and the overall scheme. The second session was subsequently worked out as a partly detailed product. To make the existing program scalable, it should be blended, because it can be equally effective and more cost-effective, more flexible, more sustainable, and it offers teachers and schools more independence compared to face-to-face learning (Owston et al, 2008; Yurtseven et al. 2020). The most important points for making a professional development are listed below. These points derived from the theoretical framework, the document-analysis and the interviews. The main points for making a professional development program scalable are:

- The first session is an offline session. The use of initial face-to-face meetings is stressed in previous research (e.g. McDonald, 2014), which finds that participants value an initial orientation session to introduce the course and familiarize themselves with the technology and tools (Boelens, et al., 2017).

- There should be an ICT-session to learn about and practice with the ICT-tools. Participants should be familiar with several online tools and should know how to learn with it: (1) an online communication platform, (2) a peer-review system, and (3) a digital bulletin board. Otherwise, they will not be able to take full advantage of the professional development program, since not all teachers are comfortable with technology (Holmes, Polhemus, & Jennings, 2005).
- There should be a lot of good interaction during the online sessions. Interaction strengths the social cohesion of a learning community (Owston et al.) In this way, it is more likely that participants stay involved and keep their attention. Moreover, it gives the facilitator information about participants' learning process (phase 2 of the AfL-cycle).
- It should be a hands-on program, because teachers should be able to apply the learning material immediately. Active learning engages teachers directly in designing and trying out the learning material. It provides them an opportunity to engage in the same style of learning they are designing for their students (Darling-Hammond, et al., 2017).
- The first session should be filled with good resources, links, examples, questions, etcetera. There should also be a lot of learning material available online, so that participants are able to find (extra) information when they need it to make a consequential change sustained over time (Coburn, 2003).

To answer the second research question about the quality of the program, the skeleton design, overall scheme, and elaborated session were evaluated with one expert and two teachers. This evaluation focused on the components that derived from the Matchboard from SLO (1) relevance, (2) consistency, (3) expected usability, and (4) expected effectivity (Nieveen, et al., 2012). The expert and the teachers were positive about the relevance since the program is based on recent insights. It is likely to meet the learning needs, because most teachers' knowledge, skills, and attitude concerned AfL could be improved. The expert and teachers were positive about the consistency too, because the program follows the principles of AfL. Especially the feedback component is extremely valuable and logical in this specific AfL professional development program, since this is part of the AfL-cycle (Gulikers & Baartman, 2017). They expected that the program and all the used (ICT) tools will be very usable. Actually, commitment is an important aspect for the usability. Therefore, clear rules about the

commitment need to be established (Desimone, 2011; Imron, et al., 2020). Several remarks and suggestions that derived from the evaluation are listed on page 44. These were made to improve the skeleton design, the overall scheme and the elaborated session. The main improvements were: (1) the sequence of the first two session was changed, since that was more logical, (2) information about why to learn the ICT-tools was added, and (3) information about what to do when certain learning goals are not completed, was added.

The main points for making a professional development program scalable that are listed above were not changed. The redesigns are depicted in Appendix K, L, and M respectively.

7. Discussion

7.1 Implications for practice

Currently, the existing AfL professional development program from Wolterinck et al. (2016) for secondary school teachers and leaders is promising, but it was not accessible for a large target group. With this research, a scalable design is conducted, so more teachers could be reached to learn about AfL. An implication is that the elaborated session of the professional development program could be used in practice by secondary school teachers and leaders. Participating teachers and school leaders can improve their knowledge, skills, and attitude concerning AfL. Secondly, the above-mentioned main points for making a professional development scalable can be used for other professional development programs that limits scalability. Moreover, due to the COVID-19 pandemic, it became clear that the support of ICT is essential in education. The pandemic has forced the use of ICT to accelerate and has shown that improving the quality of professionalization in the field of online teaching is urgently needed. The use of ICT is essential during, but also after COVID-19 (Schildkamp, Wopereis, Kat-De Jong, Peet, & Hoetjes, 2020).

7.2 Limitations and implications for further research

With this research, several indicators were mentioned that are important to make a professional development program scalable. Therefore, the principles from Dekker & Feijs (2005) and Coburn (2003) were used. Coburn pointed out the need for new research designs better suited to capture the concept of scalability. She advised that research can begin to speak more clearly and persuasively about the tensions and tradeoffs involved in different strategies to take reform to scale. With this research, the principles from Dekker & Feijs, and Coburn, were further elaborated and specified in detail. Therefore, these principles were combined with the curriculum design principles from Van den Akker (2007). In this way, all indicators (see Figure 3 p. 18 for an overview) that are important to make the transfer from small-scale to large-scale professional development programs were set out and applied. So, this research contributes to the existing research about scaling up professional development programs. The main points for making a professional development program scalable (see 'Conclusion' can be used for other professional development programs that limits scalability.

There are also some limitations. Firstly, one session was completely designed and evaluated. However, before this elaborated session can be provided, the other sessions of the professional development program need to be developed too. This research has been limited to the development, testing and evaluation of the second elaborated session. Future practice that focuses on the development of the other sessions is, therefore, of added value for the further development of the professional development program and the current body of research and literature. Secondly, the scalable program was evaluated with two teachers and one expert. It would be valuable to evaluate the program on a large scale; especially after an implementation. The evaluation could focus on the other remaining parts from the Matchboard from SLO after implementation of the program that focuses on the quality of the program: actual usability and effectivity (Nieveen, et al., 2012). To measure the effectivity, it would be interesting to focus research on the effects of the AfL professional development program on student learning, for example the effects of AfL on student engagement (Kippers et al., 2018). Moreover, in this study, in depth-quality interviews were conducted in the preliminary investigation and the evaluation. These interviews provided a lot of rich information, but generalizations about the findings were not able to be made due to the small number of interviewees. To be more specific, in the preliminary investigation, interviews with four experts and six teachers were conducted. For the evaluation, one expert and two teachers were interviewed. Their findings might not be representative for all experts and secondary school teachers. More interviews with experts and teachers would be valuable to increase to reliability. In total, six teachers from two different schools were interviewed in the preliminary investigation. These teachers had relatively a lot of teaching experience (16 to 41 years). It would also be interesting to interview teachers with less teaching experience to determine if these teachers have different views on scaling-up and the quality of the program. For the preliminary investigation, four experts were interviewed. They had expertise in the field of professional development and AfL. It would also be valuable to interview experts who have expertise in blended learning.

7. Reference list

Abbasnasab, S. (2013). Defining Assessment for Learning: A proposed definition from a sociocultural perspective. *Life Science Journal, 10*(2), 2493. http://www.lifesciencesite.com/lsj/life1002/

Adams, B., Rotsaert, T., Schellens, T., & Valcke, M. (2020). Pre-service teachers as designers in the context of advertising literacy education. *Educational Design Research*., 3(1), 1-22.

Baarda, B., Bakker, E., Fischer, T., Julsing, M., Peters, V., Van der Velden, T., & de Goede, M. (2013). *Basisboek kwalitatief onderzoek: Handleiding voor het opzetten en uitvoeren van kwalitatief onderzoek*. Groningen, Holland: Noordhoff Uitgevers.

Belland, B.R., Burdo, R., & Gu, J. (2015). A blended professional development program to help a teacher learn to provide one-to-one scaffolding. *Journal of Science Teacher Education: The Official Journal of the Association for Science Teacher Education*, *26*(3), 263–289. https://doi.org/10.1007/s10972-015-9419-2

Bennett, R.E. (2011). Formative assessment: a critical review. Assessment in Education: *Principles, Policy & Practice*, 18(1), 5–25. https://doi.org/10.1080/0969594X.2010.513678

Black, P., Harrison, C., Lee, C., Marshall, B., & Wiliam, D. (2004). Working inside the black box: Assessment for learning in the classroom. *Phi Delta Kappan*, *86*(1), 8–8. https://journals-sagepub-com.proxy ub.rug.nl/doi/pdf/10.1177/003172170408600105

Black, P.J., & Wiliam, D. (1998). Inside the black box: Raising standards through classroom assessment. *Phi Delta Kappan, 80*(2), 139–148. https://www-jstor-org.proxy ub.rug.nl/stable/20439383?seq=1#metadata_info_tab_contents

Boelens, R., De Wever, B., & Voet, M. (2017). Four key challenges to the design of blended learning: A systematic literature review. *Educational Research Review*, 22, 1-18.

Broadfoot, P.M., Daugherty, R., Gardner, J., Harlen, W., James, M., & Stobart, G. (2002). *Assessment for learning: 10 principles.* Cambridge, UK: University of Cambridge School of Education.

Carless, D. (2012). *From testing to productive student learning: Implementing formative assessment in Confucian-heritage settings*. London, England: Routledge.

Carless, D., Bridges, S., Chan, C. L. W., & Glofcheski, R. (Eds.). (2017). Scaling up assessment for learning in higher education (Ser. Enabling power of assessment, volume 5). *Springer*. https://doi.org/10.1007/978-981-10-3045-1

Coburn, C.E. (2003). Rethinking scale: moving beyond numbers to deep and lasting change. *Educational Researcher*, 32(6), 3–12.

Cohen, L., Manion, L., & Morrison, K. (2013). *Research methods in education.* London, England: Routledge.

Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). Effective teacher professional development.

Dede, C., Eisenkraft, A., Frumin, K., & Hartley, A. (2016). *Teacher learning in the digital age: Online professional development in STEM education.* Cambridge, MA: Harvard Education Press.

Dede, C., Ketelhut, D., Whitehouse, P., Breit, L., & McCloskey, E.M. (2008). A research agenda for online teacher professional development. *Journal of Teacher Education, 60*(1), 8–19. doi:10.1177/0022487108327554.

Dede, C., Ketelhut, D., Whitehouse, P., Breit, L., & McCloskey, E.M. (2009). A research agenda for online teacher professional development. *Journal of Teacher Education*, *60*(1), 8–19. https://journals-sagepub-com.proxy ub.rug.nl/doi/pdf/10.1177/0022487108327554

Dekker, T., & Feijs, E. (2005). Scaling up strategies for change: change in formative assessment practices. *Assessment in Education: Principles, Policy and Practice*, 12(3), 237–254. https://doi.org/10.1080/09695940500337215

Desimone, L.M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational researcher*, 38(3), 181 199. https://journals-sagepub-com.proxy ub.rug.nl/doi/pdf/10.3102/0013189X08331140

Desimone, L.M. (2011). A primer on effective professional development. *The Phi Delta Kappan,* 92(6), 68–71. https://journals-sagepub-com.proxy ub.rug.nl/doi/pdf/10.1177/003172171109200616

Education Council (2018a). Ruim baan voor leraren: een nieuw perspectief op het leraarschap. Retrieved from https://www.onderwijsraad.nl/publicaties/adviezen/2018/11/07/ruim-baan

Education Council (2018b). Toets wijzer. Retrieved from https://www.onderwijsraad.nl/publicaties/adviezen/2018/12/13/toets-wijzer

Gulikers, J.T.M., & Baartman, L. (2017). Doelgericht professionaliseren. Formatief toetsen met effect! Wat DOET de docent in de klas?: Eindrapport NRO-PPO overzichtsstudie dossiernummer 405-15-722. NRO.

Guskey, T. (2002). Professional development and teacher change. *Teachers and Teaching: Theory and Practice, 8*(3/4), 381–391. https://www-tandfonline-com.proxy ub.rug.nl/doi/pdf/10.1080/13540600210000512?needAccess=true

Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement.* London, England: Taylor & Francis group.

Heitink, M.C., Van der Kleij, F.M., Veldkamp, B.P., Schildkamp, K., & Kippers, W. B. (2016). A systematic review of prerequisites for implementing assessment for learning in classroom practice. *Educational Research Review*, 17, 50–62. https://doi.org/10.1016/j.edurev.2015.12.002

Holmes, A., Polhemus, L., & Jennings, S. (2005). CATIE: A blended approach to situated professional development. *Journal of Educational Computing Research, 32*, 381–394. doi:10.2190/F97W-QUJ4-G7YG-FPXC

Imron, A., Wiyono, B. B., Hadi, S., Gunawan, I., Abbas, A., Saputra, B. R., & Perdana, D. B. (2020). *Teacher Professional Development to Increase Teacher Commitment in the Era of the Asean Economic Community. In 2nd Early Childhood and Primary Childhood Education* (ECPE 2020) (pp. 339-343). Atlantis Press.

Kendall, J.S., & Marzano, R.J. (2008). *Designing & assessing educational objectives.* New York: SAGE Publications Inc.

Kim, J.S., Burkhauser, M.A., Quinn, D. M., Guryan, J., Kingston, H. C., & Aleman, K. (2017). Effectiveness of structured teacher adaptations to an evidence-based summer literacy program. *Reading Research Quarterly*, 52(4), 443-467.

Kippers, W.B., Wolterinck, C.H.D., Schildkamp, K., Poortman, C.L., & Visscher, A.J. (2018). Teachers' views on the use of assessment for learning and data-based decision making in classroom practice. *Teaching and Teacher Education*, *75*(October), 199–213. https://doi.org/10.1016/j.tate.2018.06.015

Kirkpatrick, D. (1996). Great ideas revisited. techniques for evaluating training programs. revisiting kirkpatrick's four-level model. *Training and Development*, 50(1), 54–59.

http://web.a.ebscohost.com.proxyub.rug.nl/ehost/pdfviewer/pdfviewer?vid=1&sid ccbac3e6-a0bf-47ff-98ae-1ca3d1575ea8%40sessionmgr4006

Kools, M., & Stoll, L. (2016). What makes a school a learning organisation?. *OECD Education Working Paper, 137*, 67-75. Paris: OECD Publishing. Retrieved date of retrieval from: http://oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote1⁄4EDU/ WKP(2016)11&docLanguage1⁄4En.

Leahy, S., Lyon, C., Thompson, M., & Wiliam, D. (2005). Classroom assessment: Minute by minute, day by day. *Educational Leadership*, 63(3), 18-26.

Leahy, S., & Wiliam, D. (2012). From teachers to schools: Scaling up professional development for formative assessment. *Assessment and Learning*, *2*, 49-71. https://doi.org/10.4135/9781446250808

Mathews, S., McIntosh, K., Frank, J.L., & May, S.L. (2014). Critical features predicting sustained implementation of school-wide positive behavioral interventions and supports. *Journal of Positive Behavior Interventions*, 16(3), 168-178.

McDonald, P.L. (2014). Variation in adult learners' experiences of blended learning in higher education. In A. G. Picciano, C. D. Dziuban, & C. R. Graham (Eds.), *Blended Learning: Research perspectives,* 2, 215-234.

Mckenney, S., & Reeves, T., C. (2012). *Conducting educational design research.* Oxfordshire, England: Routledge.

Nieveen, N., Folmer, E., & Vliegen, S. (2012). *Het evaluatiematchboard.* Enschede, Netherlands: SLO.

Nieveen, N., Van der Hoeven, M., Ten Voorde, M., Koopmans, A., & Van Lanschot Hubrecht, V. (2013). Docent als ontwerper: Raamwerk voor doordenking ontwerptaken.

Osguthorpe, R.T., & Graham, C. R. (2003). Blended learning environments: Definitions and directions. *The Quarterly Review of Distance Education*, 4(3), 227–233.

Owston, R., Wideman, H., Murphy, J., & Lupshenyuk, D. (2008). Blended teacher professional development: A synthesis of three program evaluations. *The Internet and Higher Education, 11*, 201–210. https://doi.org/10.1016/j.iheduc.2008.07.003

Rovai, A.P. (2003). In search of higher persistence rates in distance education online programs. *Internet and Higher Education*, 6(1), 1–16. http://doi.org/10.1016/S1096-7516(02)00158-6

Russell, M., Carey, R., Kleiman, G., & Venable, J.D. (2009). Face-to-face and online professional development for mathematics teachers: A comparative study. *Journal of Asynchronous Learning Networks, 13*(2), 71–87. https://go-gale-com.proxyub.rug.nl/ps/retrieve.do?tabID=T002&resultListType=RESULT_LIST&searchResultsTye=SingleTab&searchType=AdvancedSearchForm&currentPosition=1&docId=GALE%CA281113134&docType=Report&sort=RELEVANCE&contentSegment=ZONEMOD1&prodId=AONE&contentSet=GALE%7CA281113134&searchId=R3&userGrouName=groning&inPS=true&ps=1&cp=1

Sabzian, F., Ismail, Z., Ismail, S.A.M.M., & Vajargah, K.F. (2013). An Evaluation of The Effectiveness of Teachers' Professional Development (TPD) in Iran using Akker Spider Web Model. *International Journal of Human Resource Studies*, 3(3), 1.

Schildkamp, K., Heitink, M., Van der Kleij, F., Hoogland, I., Dijkstra, A., Kippers, W., & Veldkamp, B. (2014). Voorwaarden voor effectieve formatieve toetsing. *Reviewstudie uitgevoerd in opdracht van en gesubsidieerd door NRO-PPO*.

Schildkamp, K., & Kuiper, W. (2010). Data-informed curriculum reform: Which data, what purposes, and promoting and hindering factors. *Teaching and Teacher Education, 26*, 482-496.

Schildkamp, K., Wopereis, I. G. J. H., Kat-De Jong, M., Peet, A., & Hoetjes, I. (2020). Bouwstenen voor professionaliseren in een pandemie: Een houvast voor het vernieuwend gebruik van ICT in het hoger onderwijs, aan de hand van reflectie op twee professionaliseringsinitiatieven tijdens COVID-19.

Sluijsmans, D.M.A., Joosten-ten Brinke, D., & Van der Vleuten, C.P.M. (2013). Toetsen met leerwaarde. Een reviewstudie naar de effectieve kenmerken van formatief toetsen. Den Haag.

Stichting Leerplan Ontwikkeling. (2019). *Curriculumontwikkeling.* Retrieved from https://www.slo.nl/thema/meer/curriculumontwikkeling/instrumenten/spinnenwe/inleiding/

Strauss, A., & Corbin, J. (1990). *Basics of qualitative research*. California, United States: Sage publications.

Suurtamm, C., Koch, M., & Arden, A. (2010). Teachers' assessment practices in mathematics: Classrooms in the context of reform. Assessment in Education: *Principles, Policy & Practice*, 17(4), 399-417.

Tan, K. H. K. (2017). Asking questions of (what) assessment (should do) for learning: The case of bite-sized assessment for learning in Singapore. *Educational Research for Policy and Practice, 16*(2), 189-202.

Thompson, M., & Goe, L. (2009). Models for effective and scalable teacher professional development. *Ets Research Report Series*, 2009(1), 35. https://doi.org/10.1002/j.2333 8504.2009.tb02164.

Van den Akker, J. (2007). Curriculum design research. *An introduction to educational design research*, 37.

Van der Kleij, F.M., Vermeulen, J. A., Schildkamp, K., & Eggen, T.J.H.M. (2015). Integrating data-based decision making, assessment for learning and diagnostic testing in formative assessment. *Assessment in Education: Principles, Policy & Practice, 22,* 324- 343.

Van Veen, K., Zwart, R., Meirink, J., & Verloop, N. (2010). Professional development of teachers. *ICLON/Expertisecentrum Leren van Docenten*. Retrieved date of retrieval from: https:// pure.rug.nl/ws/files/15093764/Review_professionele_ontw_leraren.pdf. qwGbiTIkYDBs8#v=onepage&q=Current%20perspectives%20in%20applied%20inf rmation%20technologies%3A%20Online%20professional%20development&f=false

Volante, L., & Beckett, D. (2011). Formative assessment and the contemporary classroom: Synergies and tensions between research and practice*. Canadian journal of education*, 34(2), 239-255.

Wiliam, D. (2011). What is assessment for learning?. *Studies in educational evaluation*, 37(1), 3-14. https://doi.org/10.1016/j.stueduc.2011.03.001

Wiliam, D. (2014). Formative assessment and contingency in the regulation of learning processes. *In Annual Meeting of American Educational Research Association*, Philadelphia: PA.

Wiliam, D., & Thompson, M. (2008). Integrating assessment with learning: What will it take to make it work?. London, England: Routledge.

Wolterinck, C.L., Kippers, W.B., Schildkamp, K., & Poortman, C.L. (2016). Factors influencing the use of formative assessment in the classroom. Paper presented at the AERA Conference, 9 April, Washington D.C., USA.

Wolterinck, C.L., Poortman, C., Schildkamp, K, & Visscher, A.J. (submitted). Assessment for Learning: How can Teacher Competencies be Developed?

Wylie, E.C., Goe, L., Leusner, D. M., Lyon, C. J., Tocic, C., Cleland, D., … Wiliam, D. (2008). Tight but loose: scaling up teacher professional development in diverse contexts. *Ets Research Report Series*, 2008(1), 141. https://doi.org/10.1002/j.2333 8504.2008.tb02115.x

Yurtseven Avci, Z., O'Dwyer, L. M., & Lawson, J. (2020). Designing effective professional development for technology integration in schools. *Journal of Computer Assisted Learning, 36*(2), 160–177. https://doi.org/10.1111/jcal.12394

8. Appendix

8.1 Appendix A

Interviews preliminary investigation teachers

Procedure

1. **Introductie**. Welkom heten, korte social-talk
2. **Opname**. Zeggen dat het interview wordt opgenomen, maar de data veilig wordt opgeslagen (vergrendeld met een wachtwoord) en dat deze worden verwijderd direct na de studie.
3. **Toestemming**. Iedereen bij langs gaan en deze toestemming verlenen. ''Hierbij verklaar ik dat ik toestemming geef voor het opnemen van dit interview.''
4. **Huidige studie**. Er bestaat een training over formatief toetsen voor middelbare schooldocenten. Echter deze training is aan een kleine 50 man gegeven. Graag zou ik voor mijn studie deze training schaalbaar willen maken, zodat een groter publiek hier toegang toe heeft. De inhoud van de training staat dus grotendeels al vast, maar de manier waarop deze training moet worden gegeven nog niet. Dat ga ik onderzoeken aan de hand van wetenschappelijke studies, ideeën van experts en jullie. Het doel is om dan deze training te ontwerpen, deels te geven en dit te evalueren.
5. **Verwachtingen respondenten**. Zoals ik al aangaf, vergt het geen voorbereidingen. Wel zou ik graag van jullie voor diegenen die dat nog niet hebben gedaan het informed-consent, indien jullie akkoord gaan, ondertekend willen ontvangen. Verder ben je uiteraard vrij om altijd vragen te stellen wanneer er dingen onduidelijk zijn of wanneer je op- of aanmerkingen hebt. Ik zou het fijn vinden als jullie op alle vragen een zo eerlijk antwoord geven.
6. **Opbouw interview**. Ik ga jullie eerst wat vragen stellen over formatief toetsen. Dan zal ik hierover wat uitleggen. Vervolgens ga ik wat vragen stellen over hoe de bestaande training het best opgeschaald kan worden.
7. **Zijn er vragen**?
8. **Vragen**

Vragen

- Wat verstaan jullie onder formatief toetsen?
    - Daarna uitleggen wat ik hieronder versta + slide 1 aanklikken
- Zijn jullie geïnteresseerd in formatief toetsen?
    - Waarom wel, waarom niet?
- Ik ben erg geïnteresseerd in jullie kennis, vaardigheden en houding met betrekking tot formatief toetsen.
- Welk cijfer zou jij jezelf geven als het gaat om:
- Bij de volgende drie vragen mag jij jezelf een cijfer geven en het graag even toelichten (1-10)
    - Kennis met betrekking tot formatief toetsen.
    - Vaardigheden met betrekking tot formatief toetsen.
    - Attitude ten aanzien van formatief toetsen.
- Hebben jullie al eerder een training, workshop of presentatie het gebied van formatief toetsen gevolgd?
    - Zo ja, wat heb je hier geleerd?
- In hoeverre is er behoefte een training op het gebied van formatief toetsen te volgen?
- Hebben jullie ervaring met online leerplatforms als Teams?
    - Zo ja, welke en wat zijn jullie ervaringen hiermee?
    - Wat zijn jullie ervaringen/bevindingen met betrekking tot deze online leerplatforms in tijden van Corona?
    - Kunnen jullie de verschillende platforms waar je ervaring mee hebt, ranken?
        - Waarom heb je het zo gerankt?
- Hebben jullie ervaringen met het volgen of geven van online trainingen?
    - Zo ja, welke training(en)/presentatie/webinar etc. heb je gevolgd of gegeven?
    - Wat was de invulling hiervan?
    - Wat is jouw mening/bevindingen hierover/hiermee?
    - Wanneer dit er veel zijn, vragen naar de minder goede/slechtste vragen.
- Aan welke voorwaarden moet het de online training voldoen om deze schaalbaar en effectief te maken? De begrippen schaalbaar en effectief heb ik op een slide gezet. Slide 2 aanklikken. (eerst zelf laten spreken, dan met onderstaande punten komen)
    - Twee voorbeelden geven:

    1. Een studie over blended learning: 4 modules. Elke module is als volgt opgebouwd: 1. studiemateriaal lezen 2. videoles van het gelezen studiemateriaal 3. discussie over de leerstof met collega's en eventueel met een expert 4. gerelateerde opdracht (bijvoorbeeld het maken van een lessenplan)

    2. Een studie over MOOC's: Massive Open Online Courses. Oudste vorm van afstandseducatie. Online lessen volgen zonder interactie. Geschikt voor duizenden mensen tegelijk. xMOOC: online lessen + interactie in een discussie om het te begrijpen, eventueel met een expert, maar online.

    - Online/blended

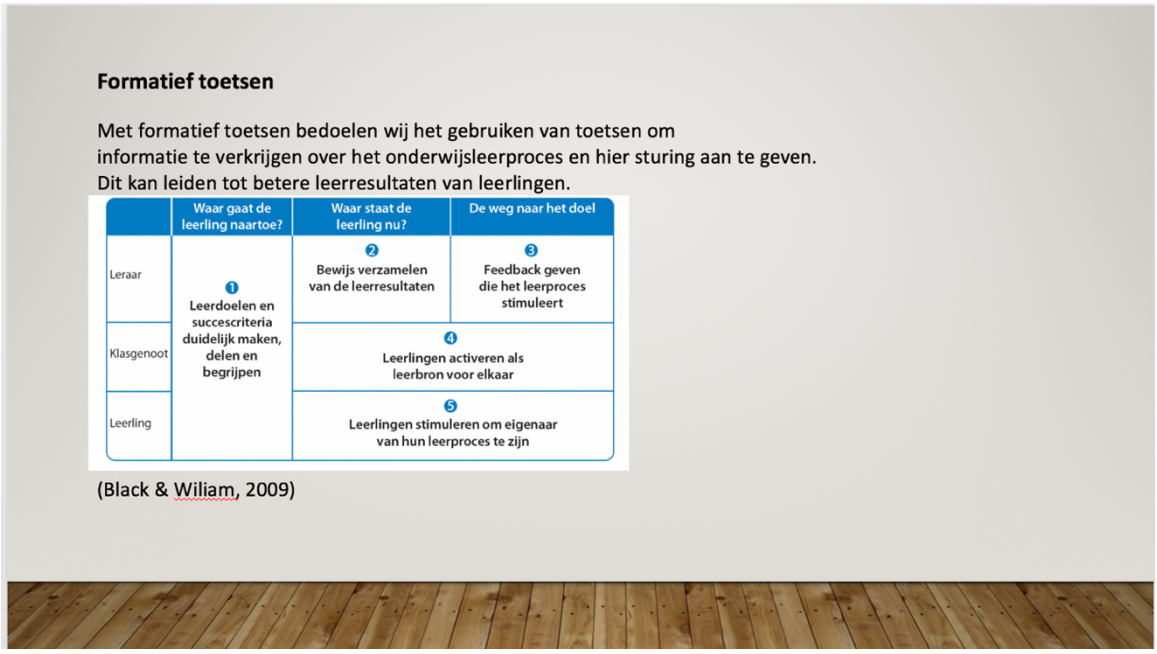
        - Waarom?
        - blended: verhouding online fysiek?
    - Hoeveel mensen?
    - Interactief?
        - Zo ja, filmpjes van lessen opsturen?
        - Reflectieformulier invullen?
    - Film van een training of live volgen?
        - Waarom?
        - Indien live, op welk moment van welke dag van de week heeft de voorkeur?
    - Met collega's of individueel volgen?
        - Waarom?
    - Lesstof controleren?
        - Zo ja, hoe?

9. Afronden:
    a. Hebben de respondenten nog iets toe te voegen?
    b. Bedanken
    c. Naar mening over interview vragen. Mochten er nog onduidelijkheden zijn, vragen of ik hen mag mailen.
    d. Aangeven wat nu gaat gebeuren in het onderzoek. Vragen of zij een samenvatting van de resultaten/mijn verslag willen.
    e. Vragen wie een deel van de training willen volgen?
    f. Deelnemers voor evaluatie? (n =2)
    g. Aangeven dat een presentje nog jullie kant op komt

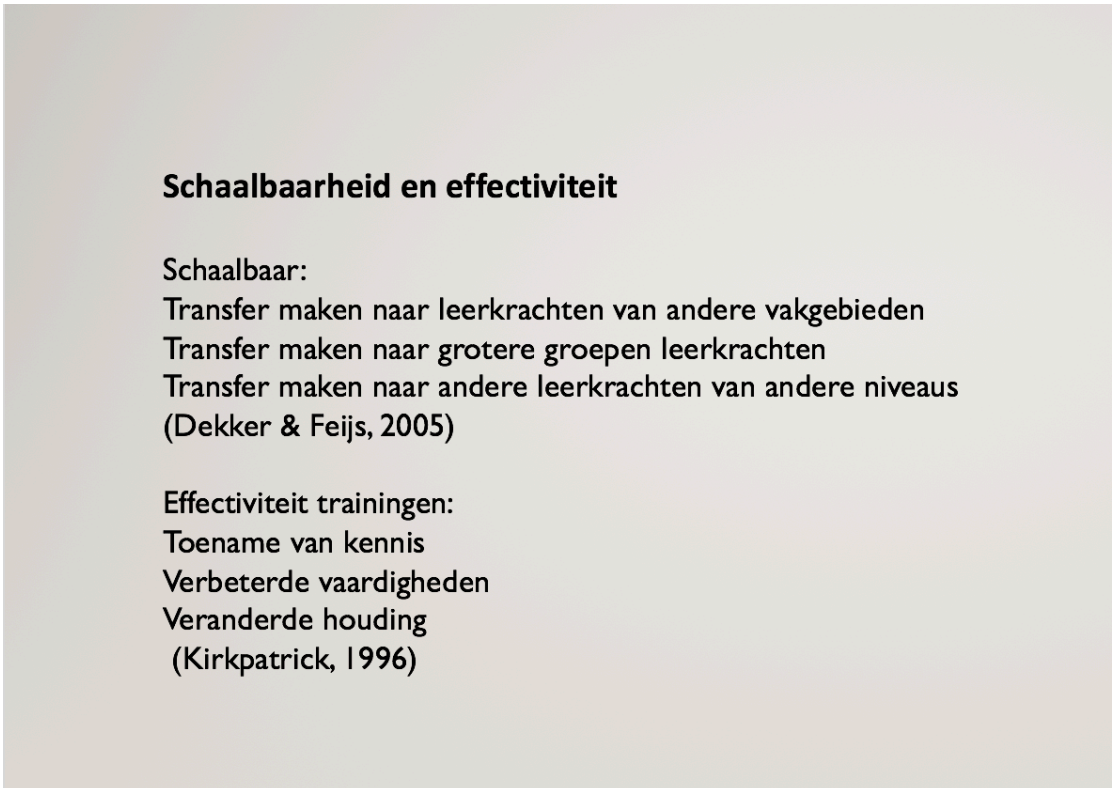
8.2 Appendix B

Slides Interviews preliminary investigation teachers

Slide 1



Slide 2



8.3 Appendix C

Interviews preliminary investigation experts

Procedure

10. **Introductie**. Welkom heten, waarderen dat ik hem mag interviewen
11. **Opname**. Zeggen dat het interview wordt opgenomen, maar de data veilig wordt opgeslagen (vergrendeld met een wachtwoord) en dat deze worden verwijderd direct na de studie.
12. **Toestemming**. Vragen of hij het volgende wil zeggen: ‘’Hierbij verklaar ik dat ik toestemming geef voor het opnemen van dit interview.’’
13. **Huidige studie**. Graag zou ik voor mijn studie de InformED-training schaalbaar willen maken, zodat een groter publiek hier toegang toe heeft. De inhoud van de training staat dus grotendeels al vast, maar de manier waarop deze training moet worden gegeven nog niet. Dat ga ik onderzoeken aan de hand van wetenschappelijke studies, ideeën van leerkrachten en verschillende experts. Het doel is om dan deze training te ontwerpen, deels te geven en dit te evalueren.
14. **Verwachtingen**. Zoals ik al aangaf, vergt het geen voorbereidingen. U bent uiteraard vrij om altijd vragen te stellen wanneer er dingen onduidelijk zijn of wanneer u op- of aanmerkingen hebt.
15. **Opbouw interview**. Ik ga u eerst wat vragen over het InformED-project. Vervolgens ga ik wat vragen stellen over hoe deze training het best opgeschaald kan worden.
16. **Zijn er vooraf nog vragen**?
17. **Vragen**

Vragen

- Hoe heeft u de InformED training zelf ervaren?
- Wat is naar uw idee goed gelukt?
- Welke verbeterpunten zijn er nog?
- Met welke online platforms, zoals Teams, heeft u ervaring?
    - Ranken
    - Waarom?

- Welke ervaring heeft u met het volgen of geven van online trainingen?
    - Zo ja, welke training(en)/presentatie/webinar etc. heeft u gevolgd of gegeven?
    - Wat was de invulling hiervan?
    - Wat is uw mening/bevindingen hierover/hiermee?
    - Wanneer dit er veel zijn, vragen naar de minder goede/slechtste vragen.
- Op welke manier is het volgens u mogelijk om de InformED training schaalbaar (**slide 2 aanklikken**) te maken?
    - Zo ja, waarom?
    - Relevant?
- Aan welke voorwaarden moet de online training voldoen om deze schaalbaar en effectief te maken? De begrippen schaalbaar en effectief heb ik op een slide gezet. (eerst zelf laten spreken, dan met onderstaande punten komen)
    - Twee voorbeelden geven:

    1. Een studie over blended learning: 4 modules. Elke module is als volgt opgebouwd: 1. studiemateriaal lezen 2. videoles van het gelezen studiemateriaal 3. discussie over de leerstof met collega's en eventueel met een expert 4. gerelateerde opdracht (bijvoorbeeld het maken van een lessenplan)

    2. Een studie over MOOC's: Massive Open Online Courses. Oudste vorm van afstandseducatie. Online lessen volgen zonder interactie. Geschikt voor duizenden mensen tegelijk. xMOOC: online lessen + interactie in een discussie om het te begrijpen, eventueel met een expert, maar online.

    - Online/blended
        - Waarom?
        - blended: verhouding online fysiek?
    - Hoeveel mensen?
    - Interactief?
        - Zo ja, filmpjes van lessen opsturen?
        - Reflectieformulier invullen?
    - Film van een training of live volgen?
        - Waarom?
        - Indien live, op welk moment van welke dag van de week heeft de voorkeur?

- Met collega's of individueel volgen?
    - Waarom?
- Lesstof controleren?
    - Zo ja, hoe?

- Eventueel: Welke zaken moeten aan de huidige training veranderd worden om deze schaalbaar te maken? (misschien vragen of er inhoudelijk nog iets veranderd moet worden)
- In de eerste bijeenkomst moeten de docenten gedachten uitwisselen met elkaar. Hoe ziet u dit voor zich wanneer de training schaalbaar moet zijn?
    - Online/fysiek
        - Indien online, hoe?
    - Groepsgrootte
    - Met of zonder expert/trainer
- Wel of geen opdrachten
    - Zo ja, wie kijkt het na?
    - Hoe wordt het nagekeken?

18. Afronden:
    a. Heeft u nog andere opmerkingen die mij kunnen helpen met deze opdracht?
    b. Bedanken
    c. Naar mening over interview vragen. Mochten er nog onduidelijkheden zijn, vragen of ik hem nog 1x mag mailen.
    d. Aangeven wat nu gaat gebeuren in het onderzoek. Vragen of hij een samenvatting van de resultaten/mijn verslag wil ontvangen.
    e. Vragen of ik hem nog eens mag interviewen/mijn ontwerp aan hem voor mag leggen.

8.4 Appendix D

Interviews evaluation expert and teachers

Procedure

1. Bedanken
2. Korte social talk
3. Vragen of het opgenomen mag worden
4. Voortgang bespreken: aangeven dat uitvoeren niet is gelukt
   - Globale opzet gemaakt
   - Eén plenaire online sessie uitgewerkt
4. Skeleton design laten zien
5. Globale opzet training doornemen
6. Kunnen jullie hier een voorstelling van maken?
7. Powerpoint met uitgewerkte sessie doornemen
8. Vragen vooraf?
9. Vragen doornemen
10. Bedanken
11. Vragen of hij/zij de scriptie toegestuurd wil krijgen

Vragen

- In hoeverre vind jij de producten (zowel globale opzet, skeleton design als uitgewerkte sessie) voorzien in behoefte?
- In hoeverre vind jij dat deze producten gebaseerd zijn op recente inzichten?
- In hoeverre zitten deze producten logisch in elkaar?
- In hoeverre denk jij dat de training bruikbaar is op grote schaal?
- In hoeverre denk jij dat de kennis, vaardigheden en houding ten aanzien van formatief toetsen bij leerkrachten wordt verbeterd na het volgen van deze training?
- Heb je nog suggesties ter verbetering?

8.5 Appendix E

Request for ethecial review

UNIVERSITY OF TWENTE.

FACULTY BMS

200944 REQUEST FOR ETHICAL REVIEW

Request nr: 200944

Researcher: Oosterheert, J.A.

Supervisor: Poortman, C.L.

Reviewer: Walma van der Molen, J.H.

Status: Approved by commission

Version: 2

1. START

A. TITLE AND CONTEXT OF THE RESEARCH PROJECT

1. What is the title of the research project? (max. 100 characters)

From teachers to schools: scaling up professional development for assessment for learning.

2. In which context will you conduct this research?

Master's Thesis

3. Date of the application

12-06-2020

5. Is this research project closely connected to a research project previously assessed by the BMS Ethics Committee?

No/Unknown

B. CONTACT INFORMATION

6. Contact information for the lead researcher

6a. Initials:

J.A.

6b. Surname:

Oosterheert

6c. Education/Department (if applicable):

M-EST

6d. Staff or Student number:

2031388

6e. Email address:

j.a.oosterheert@student.utwente.nl

6f. Telephone number (during the research project):

+31639064083

6g. If additional researchers (students and/or staff) will be involved in carrying out this research, please name them:

-

6h. Have you completed a PhD degree?

No

7. Contact information for the BMS Supervisor

7a. Initials:

C.L.

7b. Surname:

Poortman

7c. Department:

BMS-ELAN

7d. Email address:

c.l.poortman@utwente.nl

7e. Telephone number (during the research project):

+31534896675

8. Is one of the ethics committee reviewers involved in your research? Note: not everyone is a reviewer.

No

C. RESEARCH PROJECT DESCRIPTION

9a. Please provide a brief description (150 words max.) of the background and aim(s) of your research project in non-expert language.

Currently, a lot of teachers have too little knowledge and skills concerning assessment for learning. A professional development program about assessment for learning exists, called the InformED project. But this program is not available on a large scale. In this study, I want to scale-up the Informed-project. The aim is to design and evaluate an online professional development program to allow open access to the designed intervention. In this way, the professional development program will become accessible to schools throughout the Netherlands.

9b. Approximate starting date/end date of data collection:

Starting date: 2020-06-22

End date: 2020-09-29

9c. If applicable: indicate which external organization(s) has/have commissioned and/or provided funding for your research.

Commissioning organization(s):

Not applicable

Funding organization(s):

Not applicable

2. TYPE OF STUDY

Please select the type of study you plan to conduct:

My study will involve both existing and new data.

3. RESEARCH INVOLVING EXISTING DATA OR DOCUMENTS

A. WHICH DATA AND/OR DOCUMENTS WILL BE ACCESSED AND HOW?

10. Please provide a brief description of the data or documents that you plan to use (max. 2000 characters, including spaces).

I am going to use articles about online and blended professional development programs for my document-analysis. I will use several scientific, public available articles for my theoretical framework and the problem statement from LISA, Smartcat en Google Scholar.

11. Please indicate whether the data/documents you will use are:

- Publicly available

B. CONFIDENTIALITY AND ANONYMITY

12. Does the dataset contain information (or a combination of information) that can be traced back to specific individuals/organizations?

No

4. RESEARCH INVOLVING THE COLLECTION OF NEW DATA

A: RESEARCH POPULATION

20. Please provide a brief description of the intended research population(s):

Focus group teachers preliminary investigation: this group will consist of three to four teachers from two schools for secondary education. These teachers will be from different subjects. Their opinions will be used to get insights in how to scale-up an existing program. Focus group experts preliminary investigation: four different experts from a higher education institute (2 experts) and an organization that provides teacher professional development and coaching (2 experts). Focus group teachers evaluation: four teachers from the preliminary investigation will be in this sample too with four 'new' teachers. Focus group experts evaluation: the same experts from the preliminary investigation will be in this sample.

21. How many individuals will be involved in your research?

Focus group teachers: 12 teachers (8 in the preliminary investigation + 4 'new' teachers in the evaluation phase) Focus group experts: 4 experts

22. Which characteristics must participants/sources possess in order to be included in your research?

Teachers must have a diploma and should teach at secondary education.

23. Does this research specifically target minors (<16 years), people with cognitive impairments, people under institutional care (e.g. hospitals, nursing homes, prisons), specific ethnic groups, people in another

country or any other special group that may be more vulnerable than the general population?

No

24. Are you planning to recruit participants for your research through the BMS test subject pool, SONA

No

B. METHODS OF DATA COLLECTION

25. What is the best description of your research?

- Interview research

26. Please describe the activities that participants in your research will perform, max. 2000 characters, including spaces:

The teachers will participate in an online group interview with in total 4 teachers. The questions will be semi-structured. The experts will be interviewed individually online.

How much time will each participant spend (mention the number of sessions/meetings in which they will participate and the time per session/meeting)?

Half of the teachers will be interviewed one time; approximately 45 minutes. The other half will be interviewed one more time. The interviews with the experts will take 20-30 minutes approximately.

C: BURDEN AND RISKS OF PARTICIPATION

27. Please provide a brief description of these burdens and/or risks and how you plan to minimize them:

I will explain what I am going to do with the data (rendering individuals anonymous, save data on a safe place and delete it after the study). I will clearly inform research participants that they can withdraw from the research at any time without explanation/justification.

28. Can the participants benefit from the research and/or their participation in any way?

Yes

Please Explain:

They can follow (a part of) the professional development program and they can read the thesis.

29. Will the study expose the researcher to any risks (e.g. when collecting data in potentially dangerous environments or through dangerous activities, when dealing with sensitive or distressing topics, or when working in a setting that may pose 'lone worker' risks)?

No

D. INFORMED CONSENT

30. Will you inform potential research participants (and/or their legal repsentative(s), in case of non-competent participants) about the aims, activities, burdens and risks of the research before they decide whether to take part in the research?

Yes

Briefly clarify how:

I will sent an e-mail with a letter according to the BMS ethical guidelines. This letter contains information about the research goal and activities. I will ask informed consent before and for taping the interview.

32. How will you obtain the voluntary, informed consent of the research participants (or their legal repsentatives in case of non-competent participants)?

Oral (recorded) consent

33. Will you clearly inform research participants that they can withdraw from the research at any time without explanation/justification?

Yes

34. Are the research participants somehow dependent on or in a subordinate position to the researcher(s) (e.g. students or relatives)?

No

35. Will participants receive any rewards, incentives or payments for participating in the research?

- No

36. In the interest of transparency, it is a good practice to inform participants about what will happen after their participation is completed. How will you inform participants about what will happen after their participation is concluded?

- Participants will receive the researcher's contact details, so that they can contact the researcher if they have questions/would like to know more.
- Participants will receive oral/written information about what the researcher(s) will do with the collected data.
- Participants who indicate they are interested will receive a summary of the research results.

E. CONFIDENTIALITY AND ANONYMITY

37. Does the dataset contain personal identifiable information that can be traced back to specific individuals/organizations?

Yes

38. Will all research data be anonymized before they are stored and analysed?

Yes

39. Will you make use of audio or video recording?

Yes

- What steps have you taken to ensure safe audio/video data storage?

  I will place it on a device that is protected with a password.

- At what point in the research will tapes/digital recordings/files be destroyed?

  After the study, these data will be deleted immediately.

5. DATA MANAGEMENT

- I have read the UT Data policy.
- I am aware of my responsibilities for the proper handling of data, regarding working with personal data, storage of data, sharing and presentation/publication of data.

6. OTHER POTENTIAL ETHICAL ISSUES/CONFLICTS OF INTEREST

40. Do you anticipate any other ethical issues/conflicts of interest in your research project that have not been previously noted in this application? Please state any issues and explain how you propose to deal with them. Additionally, if known indicate the purpose your results have (i.e. the results are used for e.g. policy, management, strategic or societal purposes).

Not applicable.

7. ATTACHMENTS

Informed consent formulier Jet Oosterheert.pdf

8. COMMENTS

Poortman, C.L. (12-06-2020 14:03):

De aanvraag is grotendeels in orde maar de brief nog niet - hierover contact met student opgenomen.

9. CONCLUSION

Status: Approved by commission

The ethical committee has assessed the ethical aspects of your research project. On the basis of the information you provided, the committee does not have any ethical concerns regarding this research project. It is your responsibility to ensure that the research is carried out in line with the information provided in the application you submitted for ethical review. If you make changes to the proposal that affect the approach to research on humans, you must resubmit the changed project or grant agreement to the ethical committee with these changes highlighted.

Moreover, novel ethical issues may emerge while carrying out your research. It is important that you re-consider and discuss the ethical aspects and implications of your research regularly, and that you proceed as a responsible scientist.

Finally, your research is subject to regulations such as the EU General Data Protection Regulation (GDPR), the Code of Conduct for the use of personal data in Scientific Research by VSNU (the Association of Universities in the Netherlands), further codes of conduct that are applicable in your field, and the obligation to report a security incident (data breach or otherwise) at the UT.

8.6 Appendix F

Informed consent

Naam van het onderzoeksproject
From teachers to schools: scaling up professional development for assessment for learning.

Doel van het onderzoek
Dit onderzoek wordt geleid door Jet Oosterheert. U bent van harte uitgenodigd om deel te nemen aan dit onderzoek. Het doel van dit onderzoek is het opschalen van een bestaande training voor middelbare schooldocenten over assessment for learning (the InformED project).

Gang van zaken tijdens het onderzoek
U neemt deel aan een interview waarin aan u vragen zullen worden gesteld over de invulling van deze training. Een voorbeeld van een typische vraag die u zal worden gesteld: “Op welke manier denkt u dat de training schaalbaar en effectief kan zijn?’’.

U dient tenminste 16 jaar te zijn om deel te nemen aan dit onderzoek.

Van het interview zal een audio-opname worden gemaakt, zodat het gesprek later ad-verbum (woord voor woord) kan worden uitgewerkt.
Dit transcript wordt vervolgens gebruikt in het verdere onderzoek.

Potentiële risico's en ongemakken
Er zijn geen fysieke, juridische of economische risico's verbonden aan uw deelname aan deze studie. U hoeft geen vragen te beantwoorden die u niet wilt beantwoorden. Uw deelname is vrijwillig en u kunt uw deelname op elk gewenst moment stoppen.

Vergoeding
U ontvangt voor deelname aan dit onderzoek geen vergoeding. Door deel te nemen aan dit onderzoek zult u meer inzicht krijgen in het opschalen van een bestaande training. Het bredere doel van dit onderzoek is: kennis en vaardigheden bijbrengen aan docenten over assessment for learning om zo de leerresultaten van leerlingen te verbeteren.

Vertrouwelijkheid van gegevens
Uw privacy is en blijft maximaal beschermd. Er wordt op geen enkele wijze vertrouwelijke informatie of persoonsgegevens van of over u naar buiten gebracht, waardoor iemand u zal kunnen herkennen.

Voordat onze onderzoeksgegevens naar buiten gebracht worden, worden uw gegevens **anoniem** gemaakt: geanonimiseerd. Enkele eenvoudige voorbeelden hiervan:
- uw naam wordt vervangen door anonieme, op zichzelf betekenisloze combinatie van getallen.
- uw leeftijd zelf wordt niet verwerkt, maar in een categorie geplaatst. Bijvoorbeeld: leeftijd tussen 18-25 jaar / tussen 25-35 jaar, etc.
- uw woonplaats wordt niet gebruikt, maar de provincie waarin u woont.

De audio-opnamen worden direct na afronding van het onderzoek vernietigd.

Vrijwilligheid
Deelname aan dit onderzoek is geheel vrijwillig. U kunt als deelnemer uw medewerking aan het onderzoek te allen tijde stoppen, of weigeren dat uw gegevens voor het onderzoek mogen worden gebruikt, zonder opgaaf van redenen.

Dit betekent dat als u voorafgaand aan het onderzoek besluit om af te zien van deelname aan dit onderzoek, dat dit op geen enkele wijze gevolgen voor u zal hebben. Tevens kunt u tot 5 werkdagen (bedenktijd) na het interview alsnog de toestemming intrekken die u hebt gegeven om gebruik te maken van uw gegevens.

In deze gevallen zullen uw gegevens uit onze bestanden worden verwijderd en vernietigd.
Als u tijdens het onderzoek, na de bedenktijd van 5 werkdagen, besluit om uw medewerking te staken, zal dat eveneens op geen enkele wijze gevolgen voor u hebben. Echter, de gegevens die u hebt verstrekt tot aan het moment waarop uw deelname stopt, zal in het onderzoek gebruikt worden, inclusief de bescherming van uw privacy zoals hierboven beschreven. Er worden uiteraard geen nieuwe gegevens verzameld of gebruikt.

Als u besluit om te stoppen met deelname aan het onderzoek, of als u vragen heeft, of uw bezorgdheid kenbaar wilt maken, of een vorm van schade of ongemak ondervindt vanwege het onderzoek, neemt u dan alstublieft contact op met de onderzoeksleider:
Jet Oosterheert, j.a.oosterheert@student.utwente.nl

Toestemmingsverklaring
Met uw ondertekening van dit document geeft aan dat u minstens 16 jaar oud bent; dat u goed bent geïnformeerd over het onderzoek, de manier waarop de onderzoeksgegevens worden verzameld, gebruikt en behandeld en welke eventuele risico's u zou kunnen lopen door te participeren in dit onderzoek.

Indien u vragen had, geeft u bij ondertekening aan dat u deze vragen heeft kunnen stellen en dat deze vragen helder en duidelijk zijn beantwoord. U geeft aan dat u vrijwillig akkoord gaat met uw deelname aan dit onderzoek. U ontvangt een kopie van dit ondertekende toestemmingsformulier.

Ik ga akkoord met deelname aan een onderzoeksproject geleid door Jet Oosterheert. Het doel van dit document is om de voorwaarden van mijn deelname aan het project vast te leggen.

1. Ik kreeg voldoende informatie over dit onderzoeksproject. Het doel van mijn deelname als een geïnterviewde in dit project is voor mij helder uitgelegd en ik weet wat dit voor mij betekent.

2. Mijn deelname als geïnterviewde in dit project is vrijwillig. Er is geen expliciete of impliciete dwang voor mij om aan dit onderzoek deel te nemen.

3. Mijn deelname houdt in dat ik word geïnterviewd door een onderzoeker van de Universiteit Twente. Het interview zal ongeveer 45 minuten duren. Ik geef de onderzoeker toestemming om tijdens het interview opnames (geluid / beeld) te maken en schriftelijke notities te nemen. Het is mij duidelijk dat, als ik toch bezwaar heb met een of meer punten zoals hierboven benoemd, ik op elk moment mijn deelname, zonder opgaaf van reden, kan stoppen.

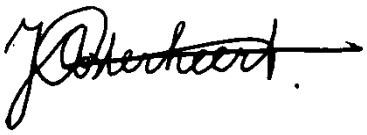
4. Ik heb het recht om vragen niet te beantwoorden. Als ik me tijdens het interview ongemakkelijk voel, heb ik het recht om mijn deelname aan het interview te stoppen.

5. Ik heb van de onderzoeksleider de uitdrukkelijke garantie gekregen dat de onderzoeksleider er zorg voor draagt dat ik niet ben te identificeren in door het onderzoek naar buiten gebrachte gegevens, rapporten of artikelen. Mijn privacy is gewaarborgd als deelnemer aan dit onderzoek.

6. Ik heb de garantie gekregen dat dit onderzoeksproject is beoordeeld en goedgekeurd door de ethische commissie van de Behavioural, Management and Social Sciences (BMS) Ethics Committee. Voor bezwaren met betrekking tot de opzet en of uitvoering van het onderzoek kan ik me wenden tot de Secretaris van de Ethische Commissie van de faculteit BMS op de Universiteit Twente via ethicscommittee-bms@utwente.nl.

7. Ik heb dit formulier gelezen en begrepen. Al mijn vragen zijn naar mijn tevredenheid beantwoord en ik ben vrijwillig akkoord met deelname aan dit onderzoek.

8. Ik heb een kopie ontvangen van dit toestemmingsformulier dat ook ondertekend is door de interviewer.

Naam deelnemer	Handtekening	Datum
_____	_____	_____
Jet Oosterheert		15-06-2020

8.7 Appendix G

Codebook interviews

Code	**Beschrijving**
Leeromgeving (online/blended)	Verschillende onderwijsvormen waarin het professionaliseringstraject plaatsvindt. Ofwel online of hybride (onderwijsvorm waarbij de onderwijsactiviteiten deels online en deels fysiek zijn bij het professionaliseringstraject)
Leeractiviteiten	Leeractiviteiten omvatten het hele scala aan handelingen/activiteiten die de participanten uitvoeren tijdens het professionaliseringstraject.
Tijd 1. Duur 2. Aantal sessies 3. Voorkeursdag 4. Voorkeurstijd	1. Duur van het professionaliseringstraject. 2. Aantal sessies voor het professionaliseringstraject. 3. Voorkeursdag voor het professionaliseringstraject. 4. Voorkeurstijd voor het professionaliseringstraject.
Groeperingsvormen	Informatie over hoe de groepjes worden gevormd voor het professionaliseringstraject. Bijvoorbeeld per school of per sectie.
Diepgaande vernieuwingen 1. Opvattingen over leren/voorwaarden om te leren 2. Interactie	1. Onderliggende opvattingen over hoe leerkrachten leren en wat daarbij belangrijk is. 2. Student- en docentenrollen in de klas, manier van praten/communiceren met elkaar en onderling. Dus ook interactie tijdens het professionaliseringstraject tussen de leerkrachten.
Duurzaamheid 1. Duurzame hulpmiddelen 2. Rol collega's 3. Rol schoolleiding. 4. Ondersteuning extern	Het idee van een aanzienlijke verandering die duurzaam is. 1. Duurzame hulpmiddelen die nodig zijn in het professionaliseringstraject. 2. Ondersteunde gemeenschap van collega's dat veranderingen versterkt en mogelijkheden schept om te blijven leren. 3. Ondersteunende en geïnformeerde schoolleiders. 4. Weinig/geen ondersteuning van buitenaf op den duur.
Verspreiding 1. Transfer andere vakken	Het verspreiden van werkvormen, materialen, onderliggende gedachten, opvattingen, normen en principes naar meerde klassen en scholen.

2. Transfer meerdere leraren 3. Transfer naar andere leerjaren	1. Transfer naar andere vakken. 2. Transfer naar meerdere docenten. 3. Transfer naar andere leerjaren.
Verschuiving van eigenaarschap	De leraren/schoolleiders worden zelf eigenaar van de kennis over *assessment for learning* (hier gaat het in het professionaliseringstraject over) en weten dit te behouden, verspreiden en uit te breiden.
Vrijwilligheid	Mate van vrijwilligheid: vrijwillig. Zou het professionaliseringstraject verplicht moeten zijn voor docenten/schoolleiders of moet hun deelname op vrijwillige basis?
Aantal leerkrachten	Aantal leerkrachten dat deel kan nemen aan het professionaliseringstraject.

8.8 Appendix H

Content and structure InformED-program

The kick-off meeting from the InformED-program was a session to meet each other. Chemistry, English and Dutch teachers and the school leaders were involved. Theoretical frameworks and how it works in practice were presented. Moreover, the research about skills for assessment for learning were described. Some examples concerning assessment for learning were given and an appointment was made. There is a lot of interaction in this session. To illustrate, teachers had to ask questions about their goals for the program for example, they had to play a card game to check their prior knowledge concerning assessment for learning and they had to conduct a dialogue about the theoretical frameworks. Teachers had to watch several videos and answered several questions about it. They had to talk about it with peers. Teachers had to reflect on their own teaching skills: which skills do they master already and what do they want to learn. The outcomes are used as an input for the first meeting. The exercise for the next meeting was to film a few lessons to show their way of assessment for learning. They have to upload their videos in the peer-review system used in the InformED-program. It is an online platform where videos, vlogs presentations and more can be uploaded and reviewed and or assessed by peers. Teachers also had to start with making a series of lessons.

The first meeting focused on sharing learning goals and success criteria. It started with a recap from the kick-off meeting. The learning goals and success criteria that derived from the kick-off meeting were made explicit. Next, teachers watched videos in groups and reflected together on it with teachers from the same subject. They also had to give tips on each other. Moreover, theory about analyzing students' learning progress and websites for materials were given. At the end of the session, teachers brainstormed about different ways of collection information (a part of the theme next session). Teachers had to make a video for the second meeting where they showed this theory in practice and they worked on the series of lessons too. Lastly, they had to give feedback on two randomly assigned videos from teachers from their subject and read a chapter from a book.

The second meeting focused on collecting and interpreting information and stimulating students' learning process. It started again with a recap from the first meeting. To

check whether teachers' read the chapter, a short quiz with four questions was made. Next, teachers watched videos in groups with teachers from the same subject and discussed together on it. Teachers received tips and had to pitch these tips plenary. After that, information about analyzing students' learning progress was given. There was a focus on scaffolding: what is it and how to do it? Subsequently, teachers thought about situations in which 1/3 part of the class did not do their task correctly. Together, they had to solve these problems. For next session, teachers had to make progress with the series of lessons. Again, they had to make a video for the third meeting where they show the new learning content and they had to give feedback on two randomly assigned videos from teachers from their subject. Lastly, they had to read a part of an article and a chapter. There was a Mentimeter at the end of the session with questions about the session.

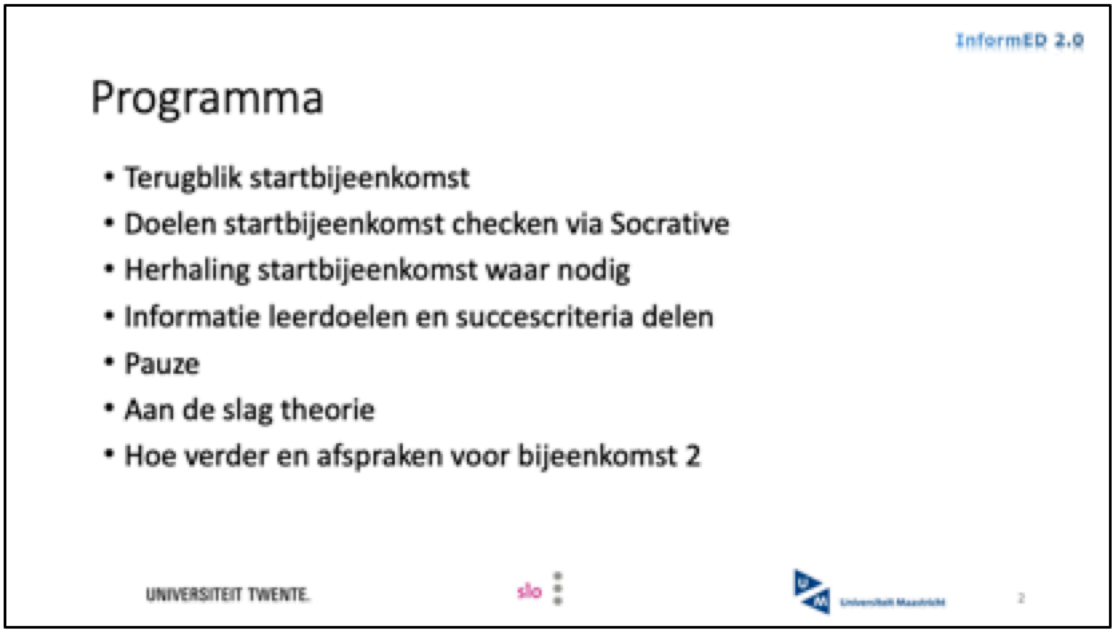
The focus was on students' learning process in the third meeting. The meeting started with a recap from meeting two and the reflection they made. After that, teachers worked in groups and watched videos together about analyzing students' learning process. There was a short recap about scaffolding and additional information about scaffolding was given. For next session, teachers had to read a chapter. They also had to make a vlog about why they changed things in the next lesson. They also had to give feedback on two randomly assigned videos from teachers from their subject. At the end of the session, teachers had to go to their school leaders. These school leaders made a pitch where they present their plan.

The last session focused on setting goals. The session started with an evaluation of school leaders' role. Teachers had to discuss about it with their 'neighbour'. Next, teachers watched videos in groups with teachers from the same subject and discussed together on it. Subsequently, there was a retrospective on the learning goals in the subject groups. After that was a retrospective on the learning needs. During the session, there was a focus on the core objectives, qualification descriptors and learning progressions from Stichting Leerplan Ontwikkeling (SLO). Teachers made a design for the series of lessons with the whole AfL-cycle. At the end, teachers had to fill in a format with one tip and one top.

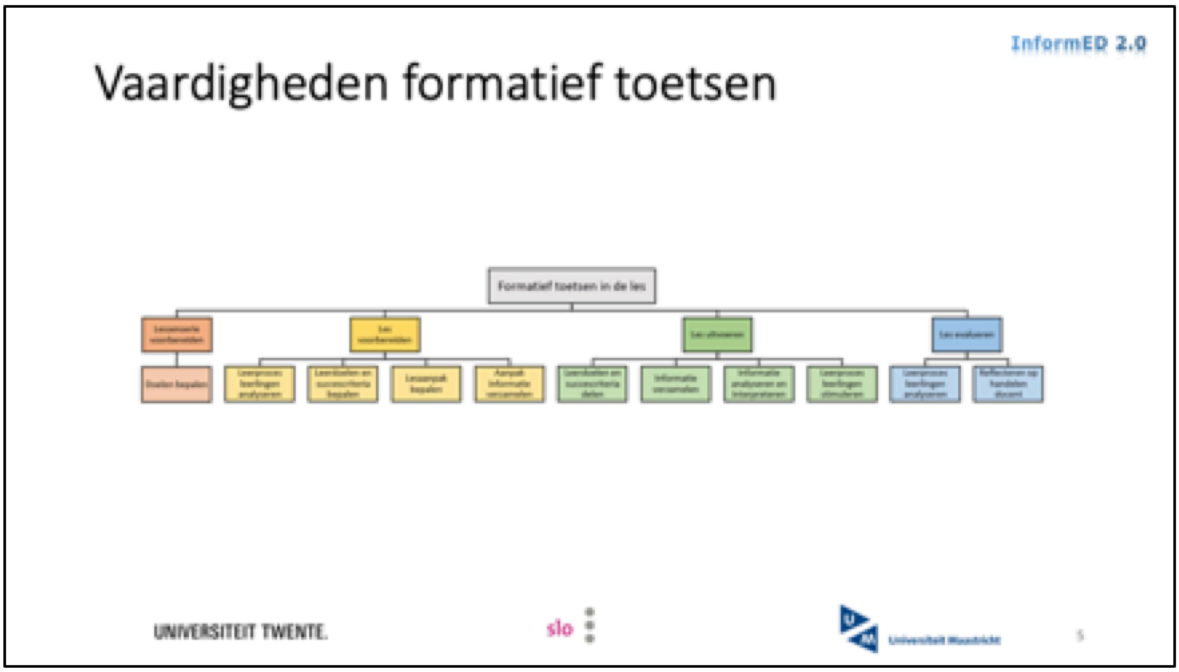
8.9 Appendix I

Session 2

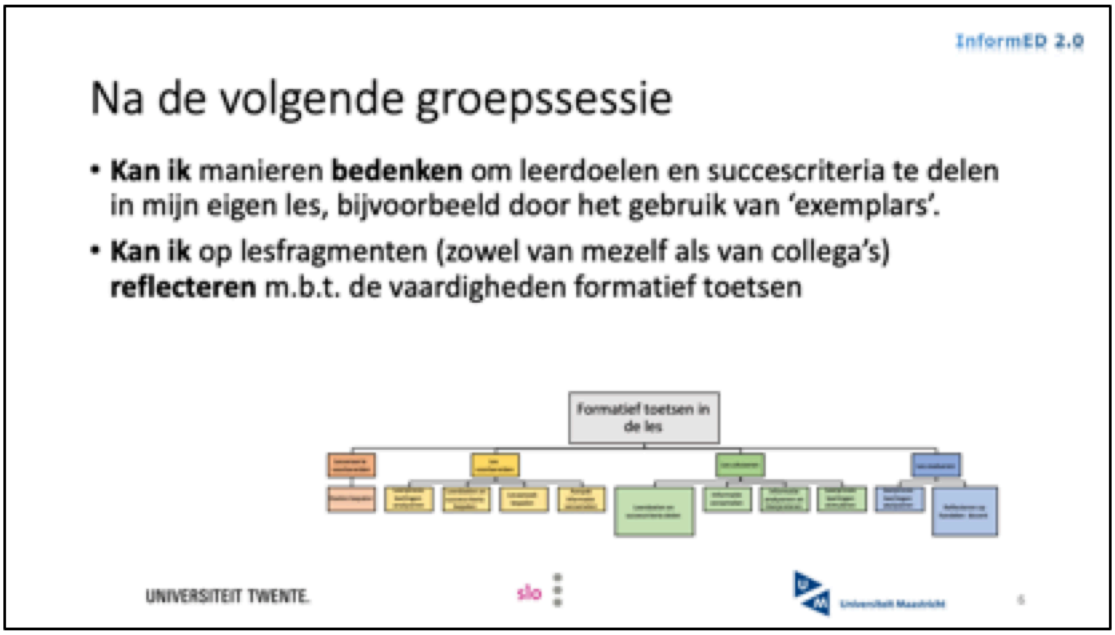
Vragen om microfoons en camera uit te zetten.
Vragen kunnen worden gesteld in de chat via Teams.

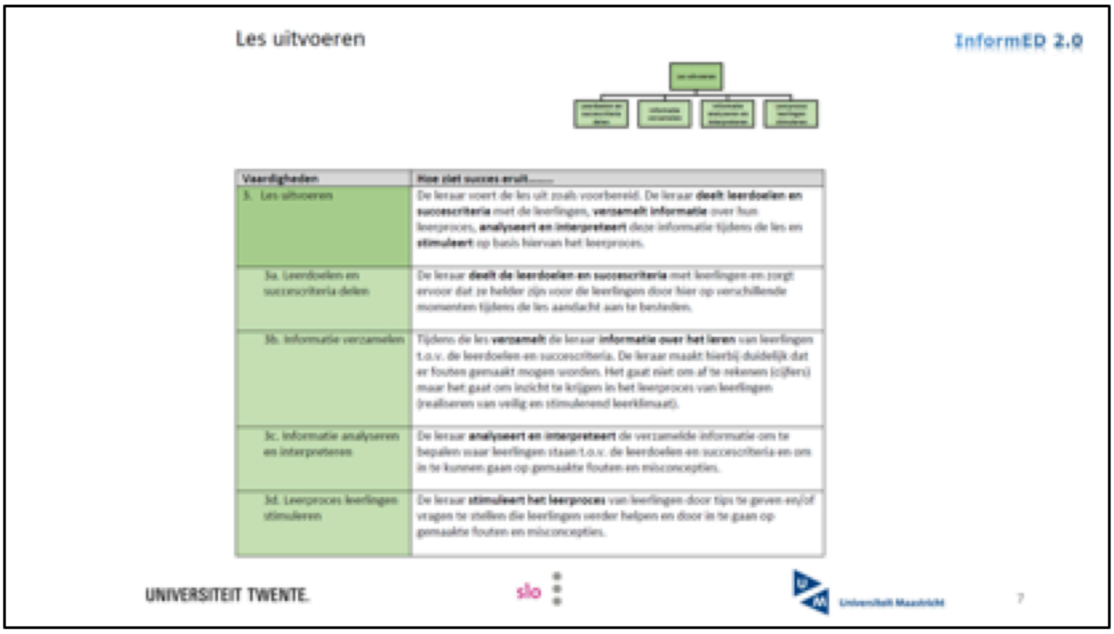


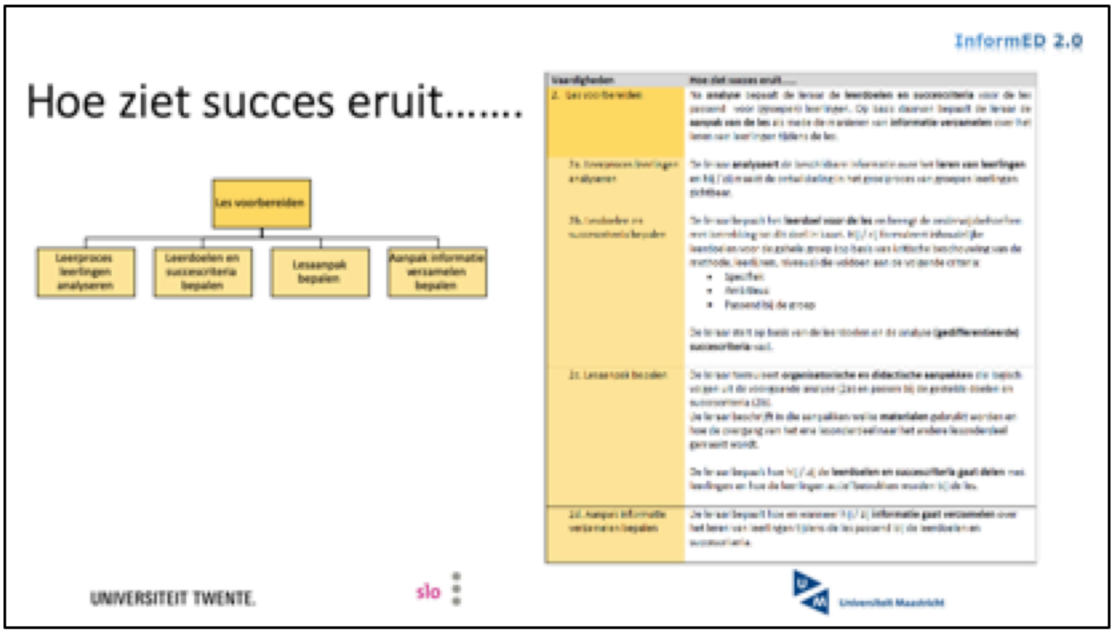
Vragen en multiple choice via Socrative.
Bij veel fouten bij een bepaald onderdeel, wordt een deel herhaald.

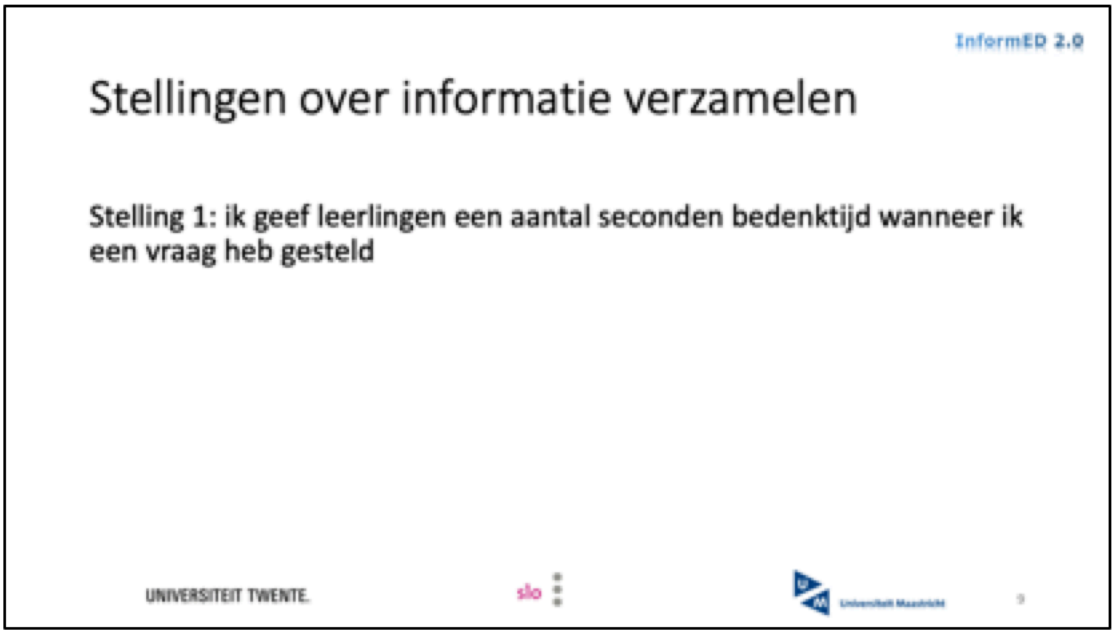


Als de stickers zijn geplakt tijdens de eerste fysieke sessie, komen de aantallen hieronder te staan. (Facilitator neemt foto tijdens fysieke bijeenkomst)
Doel uitleggen van alle informatie die is opgehaald door de reflectie a.h.v. deze stickers.
Doel: training maken die aansluit bij behoeften (uitgewerkt in volgende dia's).




Les uitvoeren
InformED 2.0
Vaardigheden
Hoe ziet succes eruit……
3. Les uitvoeren
De leraar voert de les uit zoals voorbereid. De leraar deelt leerdoelen en succescriteria met de leerlingen, verzamelt informatie over hun leerproces, analyseert en interpreteert deze informatie tijdens de les en stimuleert op basis hiervan het leerproces.
3a. Leerdoelen en succescriteria delen
De leraar deelt de leerdoelen en succescriteria met leerlingen en zorgt ervoor dat ze helder zijn voor de leerlingen door hier op verschillende momenten tijdens de les aandacht aan te besteden.
3b. Informatie verzamelen
Tijdens de les verzamelt de leraar informatie over het leren van leerlingen t.o.v. de leerdoelen en succescriteria. De leraar maakt hierbij duidelijk dat er fouten gemaakt mogen worden. Het gaat niet om af te rekenen (cijfers) maar het gaat om inzicht te krijgen in het leerproces van leerlingen (realiseren van veilig en stimulerend leerklimaat).
3c. Informatie analyseren en interpreteren
De leraar analyseert en interpreteert de verzamelde informatie om te bepalen waar leerlingen staan t.o.v. de leerdoelen en succescriteria en om in te kunnen gaan op gemaakte fouten en misconcepties.
3d. Leerproces leerlingen stimuleren
De leraar stimuleert het leerproces van leerlingen door tips te geven en/of vragen te stellen die leerlingen verder helpen en door in te gaan op gemaakte fouten en misconcepties.
UNIVERSITEIT TWENTE.
slo
Universiteit Maastricht
7


Hoe ziet succes eruit…….
InformED 2.0
Les voorbereiden
Leerproces leerlingen analyseren
Leerdoelen en succescriteria bepalen
Lesaanpak bepalen
Aanpak informatie verzamelen bepalen
Vaardigheden
Hoe ziet succes eruit……
Specifiek
Ambitieus
Passend bij de groep
UNIVERSITEIT TWENTE.
slo
Universiteit Maastricht



Aangeven met ja/nee via polls in Teams.
Eventueel random mensen om toelichting vragen.
Het belang hiervan daarna aangeven.

Aangeven met ja/nee via polls in Teams.
Eventueel random mensen om toelichting vragen.
Het belang hiervan daarna aangeven.

InformED 2.0

Stellingen over informatie verzamelen

Stelling 3: ik verzamel aan het einde van de les bewijsmateriaal voor het leren.

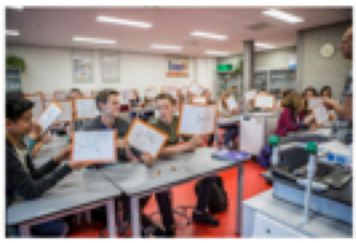
UNIVERSITEIT TWENTE. slo Universiteit Maastricht 11

Aangeven met ja/nee via polls in Teams.
Eventueel random mensen om toelichting vragen.
Het belang hiervan daarna aangeven.

InformED 2.0

Stellingen over informatie verzamelen

Stelling 4: ik gebruik *whiteboardjes*/'wisbordjes' in de les.



UNIVERSITEIT TWENTE. slo Universiteit Maastricht 12

Aangeven met ja/nee via polls in Teams.
Eventueel random mensen om toelichting vragen.
Het belang hiervan aangegeven en ook vertellen dat er wat met deze informatie gedaan moet worden.

InformED 2.0

Informatie verzamelen over het leren

- Je kunt pas de juiste informatie verzamelen als de **doelen en succescriteria** helder zijn.
- Je verzamelt informatie over **wat een leerling weet of kan**: het feit dat je er les over hebt gegeven wil nog niet zeggen dat de leerling het geleerd heeft.
- Verschillende vormen van data: discussies in de klas, vragen stellen, toetsen, mondeling, observaties, huiswerk etc.
- Fragment Dylan Wiliam: "het belang van informatie verzamelen"

UNIVERSITEIT TWENTE. slo 13

Video wordt ook op Padlet geplaatst.

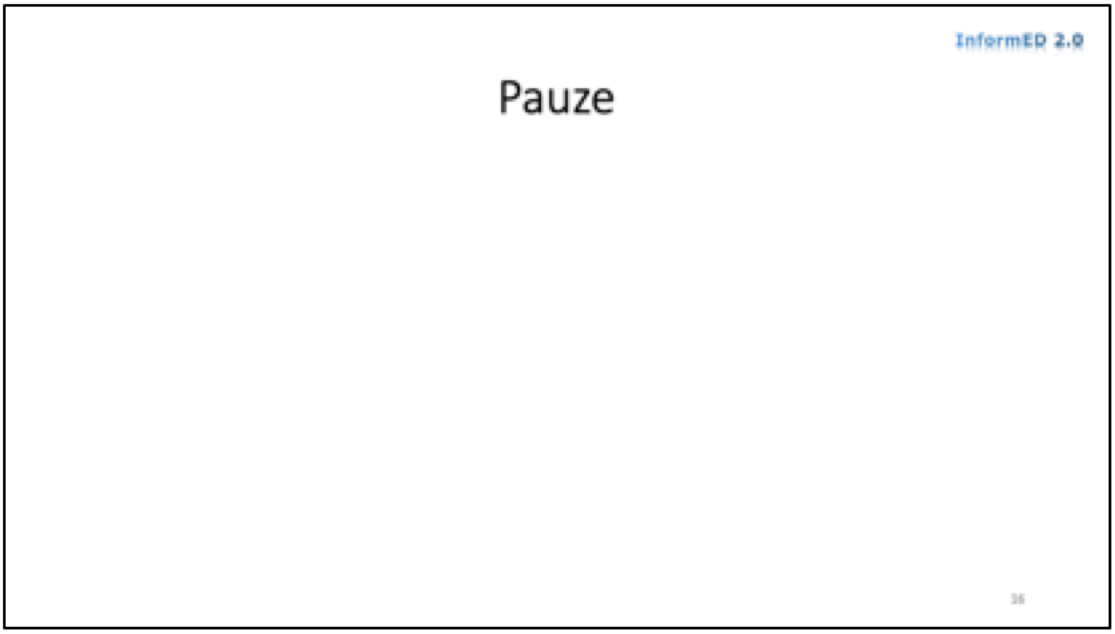
InformED 2.0

Toetsen: informatie verzamelen

Informeel informatie verzamelen over het leerproces, bv.: vragen in de klas, discussies in de klas, observeren
Assessment for learning

Formeel informatie verzamelen over het leerproces, bv.: proefwerken, so's, examens, externe toetsen
Opbrengstgericht werken

UNIVERSITEIT TWENTE. slo 14

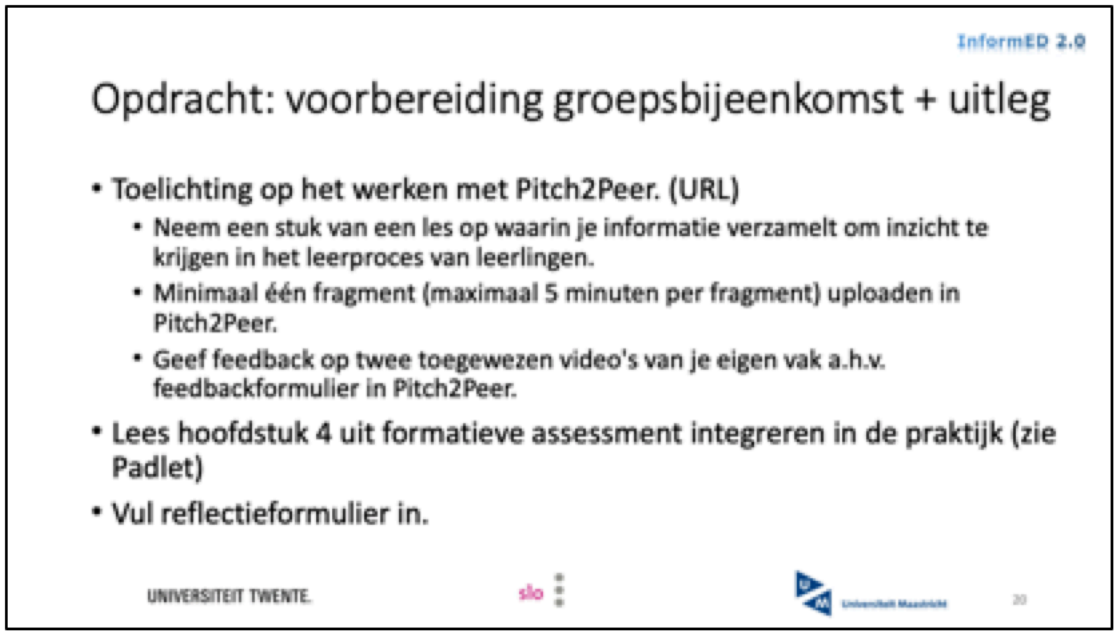


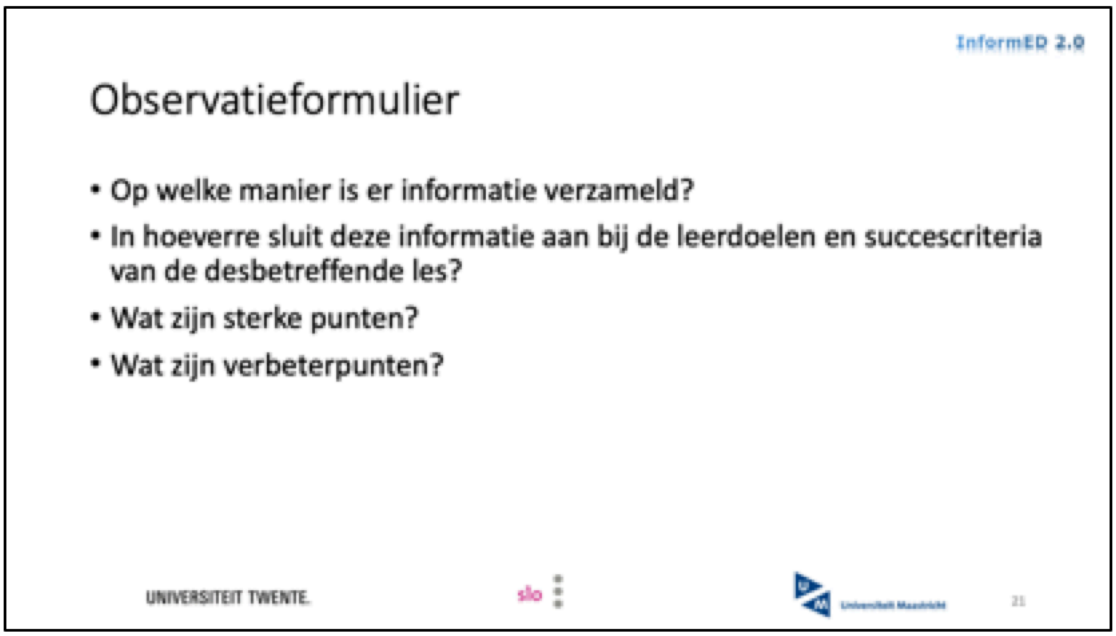
Kwartier pauze.

Deelnemers doen dit fysiek.

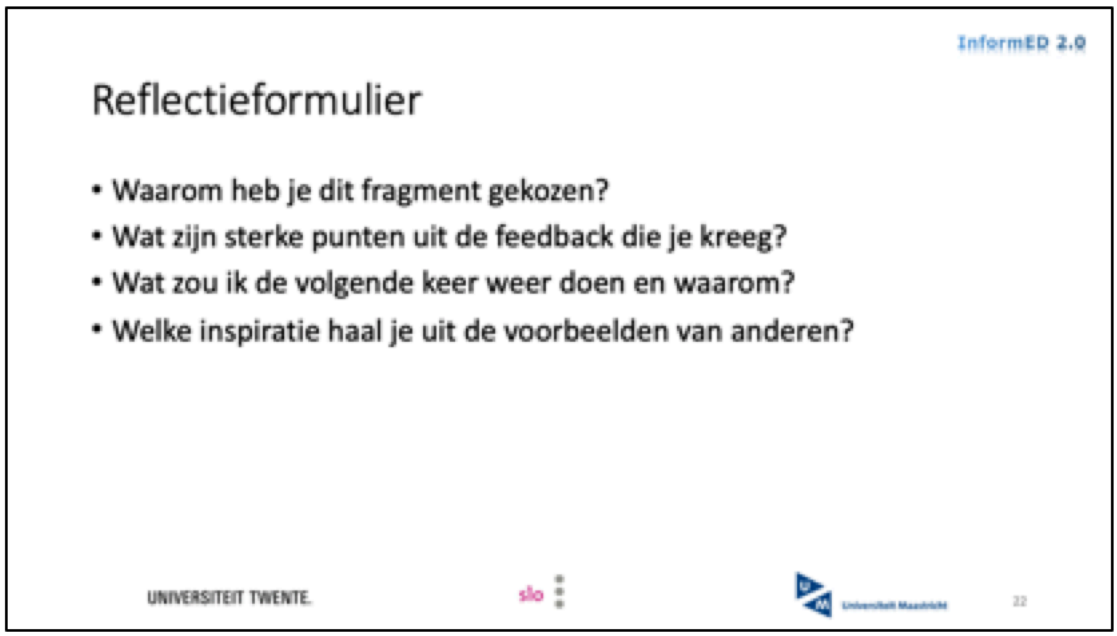
In vakgroep. Post-its op scherm/tafel plakken van voorbeelden.
Ieder groepje wijst iemand aan die het daarna plenair presenteert via Teams.

Sites ook te vinden op Padlet.





Ingevoegd in Pitch2Peer.
Via daar vullen deelnemers in voor twee aangewezen video's.



Ingevoegd in Pitch2Peer.

Kunnen gesteld worden via de chat of d.m.v. hand opsteken in Teams.

8.10 Appendix J

Observation form

In groepjes van drie gaan jullie elkaars opgenomen lesfragment bekijken. Ieder van jullie heeft een fragment geselecteerd waarin jouw manier van formatief evalueren waarop één of meer fasen van de FE-cyclus tot uiting komt. Deze video is geüpload via Pitch2Peer.

Hoe ga je te werk?

1. Degenen die het lesfragment inbrengt, geeft een korte inleiding voordat het lesfragment wordt getoond. Vertel kort:
    - wat je in de les gedaan hebt;
    - waarom dit fragment uit de gehele lesopname de beste keuze was om te laten zien.

2. Na de inleiding bekijk je met elkaar de video. Houd daarbij de onderstaande vragen in gedachten.
    - Welke formatieve activiteiten zie ik en binnen welke fase(n) van de FE-cyclus worden die uitgevoerd?
    - Wat maakt de activiteiten formatief?
    - Wie voert de activiteiten uit: wat doet de leraar en wat doen de leerlingen?

3. Noteer alle drie na het bekijken van het videofragment:
    - in steekwoorden je antwoorden op de vragen bij 2;
    - welke kwaliteiten je al ziet/ wat er al in ontwikkeling is;
    - welke leerpunten je nog ziet.

4. Ga met elkaar in gesprek over het videofragment en bespreek samen. Doe dit aan de hand van de cyclus van succes (zie stap 1 (+), stap 2 (?), stap 3 (-) en stap 4 (O):
    - in hoeverre de formatieve activiteit(en) al in ontwikkeling is (+) EN hoe dat komt (?).
    - wat de volgende stap is die de leraar op de video wil zetten. Wat hij wil verstevigen (-) EN wat hij nodig heeft om de leerpunten tot ontwikkeling te brengen (O).

    Hierbij is het van belang om dus eerst de kwaliteiten die je ziet te benoemen en te bespreken waarom dat al lukt. Daarna probeert de betreffende leraar zelf ontwikkelpunten te formuleren en die bespreek je met elkaar. Zien jullie dat alle drie als leerpunt en waarom? Ten slotte bespreek je wat de leraar nodig heeft om het leerpunt tot ontwikkeling te brengen. Op de volgende pagina zie je de fases van succes schematisch uitgewerkt.

Beloop de stappen 1 – 4 ook voor de andere video's.

5. Na het bekijken van de video's reflecteer je met zijn drieën:

- Wat maakt het ene fragment meer formatief dan het andere en waarom?

Reflection form

Individueel beantwoord je de volgende vragen na afloop van elke groepsessie. Je voegt dit in via Pitch2Peer.

- Waarom heb je dit fragment gekozen?
- Wat zijn sterke punten uit de feedback die je kreeg?
- Wat zou ik de volgende keer weer doen en waarom?
- Welke inspiratie haal je uit de voorbeelden van anderen?

8.11 Appendix K

Improved skeleton design

Design task	Materials/resources	Activities/processes	Participation/ Implementation	Form of delivery
Initial session	Facilitator; high quality videos	Commitment is made; structure of program; information about AfL; watch videos + answer question; reflect on learning practice	All teachers and school leaders, plenary	Offline
Session school leaders	Facilitator; person for answering questions	Structure of the program; information about activities trainers; assignment explanation	All school leaders	Offline
ICT-session	ICT-Expert; the online bulletin board; the peer-review system used in the InformED-porgram	Practice with the peer-review system and the online bulletin board and learn why it is important	All teachers, plenary	Offline
Follow-up sessions	Facilitator; person for answering questions; expert available for trouble shooting School leaders are present during 1 session	Information about AfL-cycle; explanation activities group meetings	All teachers (in session 3 school leaders too)	Online
Meetings in groups	expert available for trouble shooting; videos; observation form; reflection form	Share videos + motivate; fill in observation form; give + receive feedback; reflect on learning goals	Teachers in groups (in one session school leaders too)	Offline

8.12 Appendix L

Improved global scheme

Session	Topic	Subtopics	Form of delivery
1a (teachers)	Introduction	- Meet each other - Commitment is made - Structure of program - Expectations	Offline
1b (school leaders)	Introduction	- Structure of program - Explanation of activities teachers - Get information about formative assessment formative assessment itself applying it conditions for applying - Explanation of assignment: plan in form of a pitch for teachers	Offline
ICT-session	Learn tools	- Learn how the peer-review system works - Learn how the online bulletin board works - Learn why it is important	Offline
2 (teachers)	Learning goals and sharing indicators	- Get information about formative assessment formative assessment itself models strategies learning goals and sharing indicators exemplars - Watch videos and answer questions about it - Reflect on own learning practice - Get information about sustainability - Get information about group meetings explanation of observation form for peer-feedback explanation of reflection form - Explanation video	Online
3 (teachers and school leaders)	Learning goals and sharing indicators	- Recap meeting 2 - Get information about: Learning goals Sharing indicators Collecting information about learning Formal and informal testing - school leaders pitch their plan - Explanation reading material - Explanation of observation and reflection form - Explanation video	Online

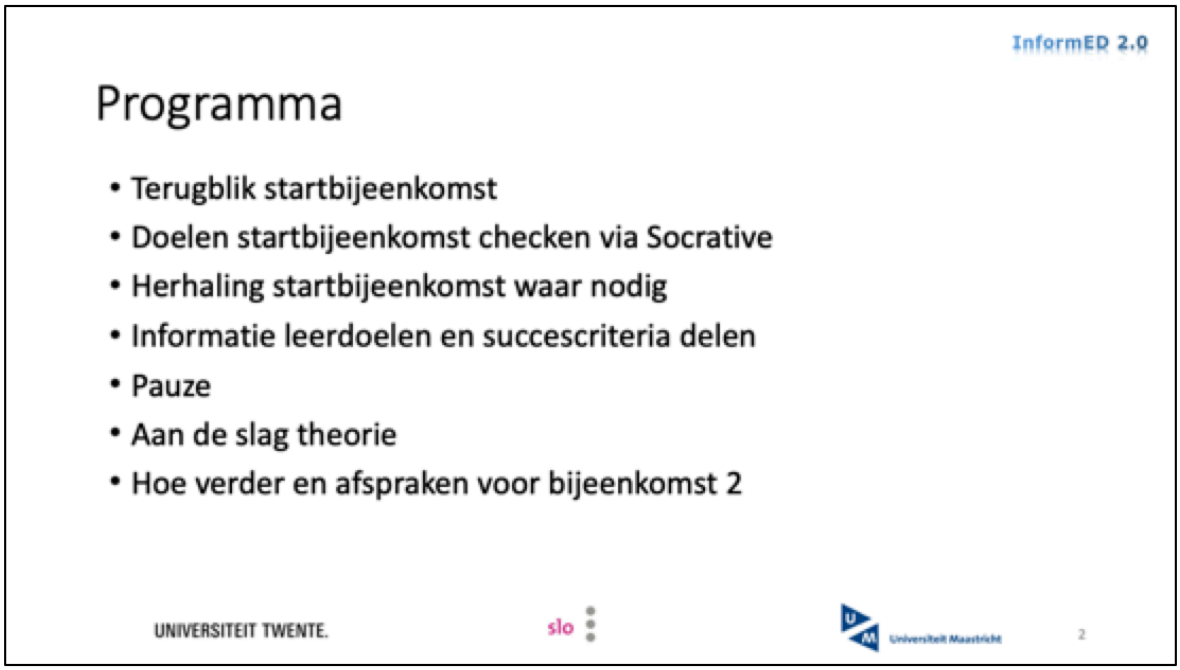
4 (teachers)	Collection information	- Recap meeting 3 - Connection with ICT-session - Interaction with e.g.: Polls Questions Mentimeter Quiz learning material - Get information about: Collecting information Analyzing learners' learning process Reflecting own acting Scaffolding - Explanation reading material - Explanation of observation and reflection form - Explanation vlog	Online
5 (teachers)	Analyzing information and interpreting and stimulating learners' learning process	- Recap meeting 4 - Interaction with: Sharing some vlogs - Get information about Collecting information that is in line with learning goals and indicators Reflecting on learning fragments Stimulating learners' learning process Preparing lessons Evaluating lessons Core objectives and final attainment levels Learning progressions Explanation reading material Explanation series of lessons	Online
6 (teachers)	Setting learning goals	- Recap meeting 5 - Interaction with: Sharing some lesson series Quiz with Socrative - Get information about: Whole AFL-cycle Core objectives and final attainment levels Learning progressions End criteria series of lessons - Explanation exercise group meeting	Online
7 (teachers and school leaders)	Repetition and reflection	- Recap all sessions - Interaction with: Sharing some lesson series Sharing some experiences Time for questions	Online

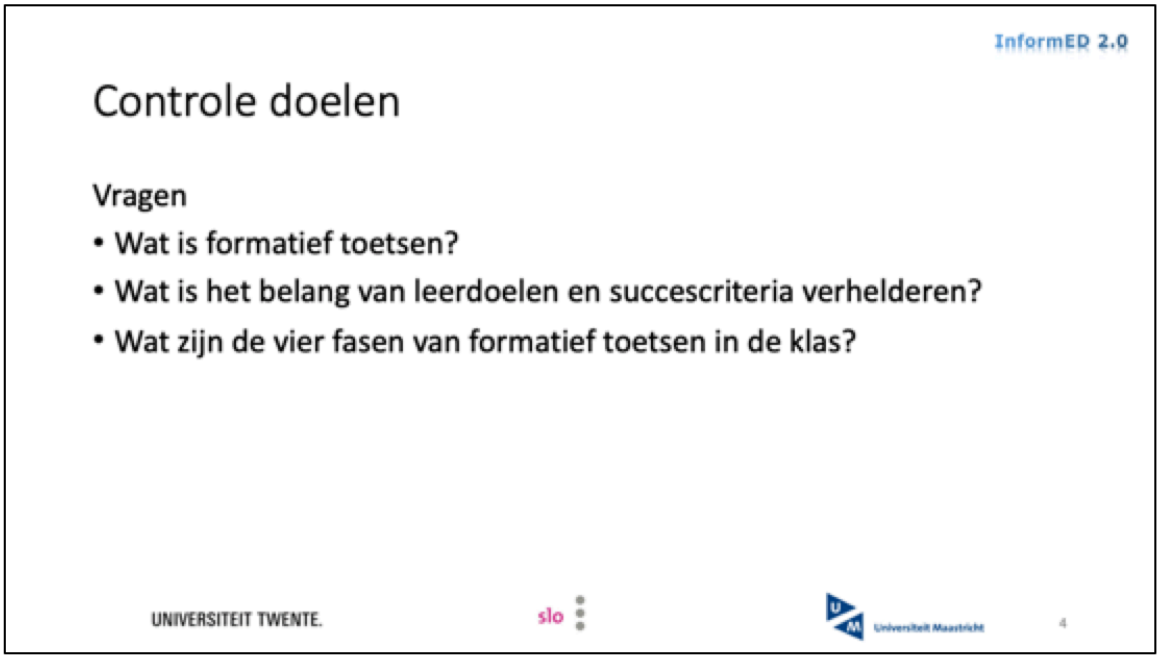
Group meetings*	Work with learning content	- Share video + motivate fragment - Fill in observation form for two peers - Give and receive feedback - Reflect with reflection form - School leaders are involved in some groups at one session	Offline

8.13 Appendix M

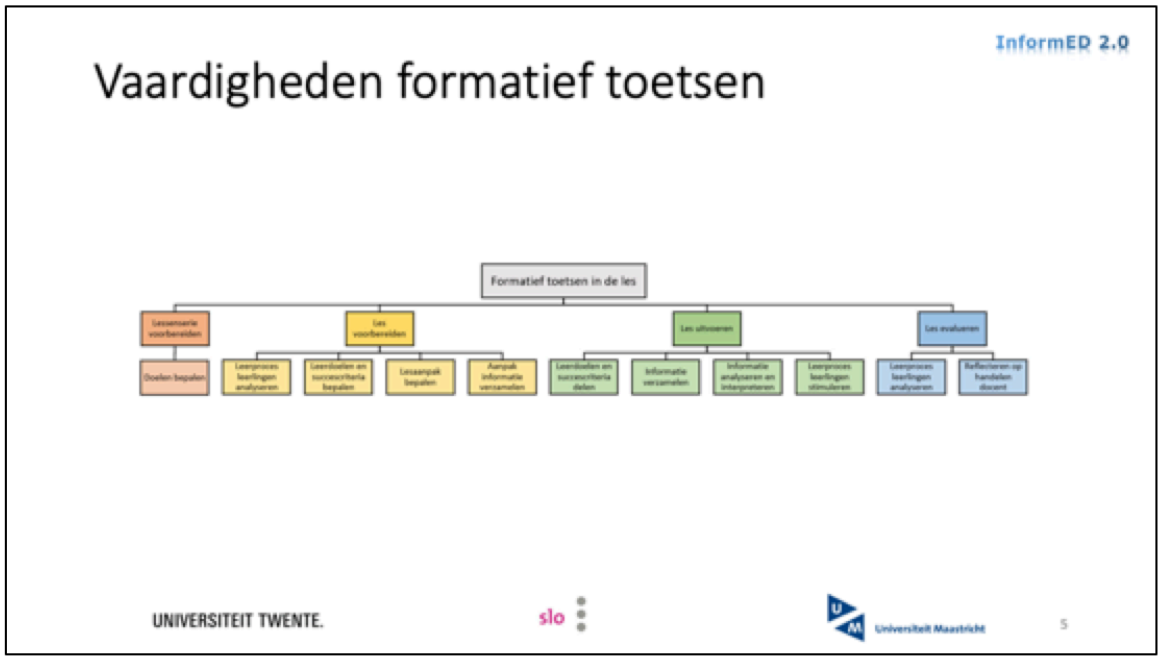
Improved elaborated session

Vragen om microfoons en camera uit te zetten.
Vragen kunnen worden gesteld in de chat via Teams.



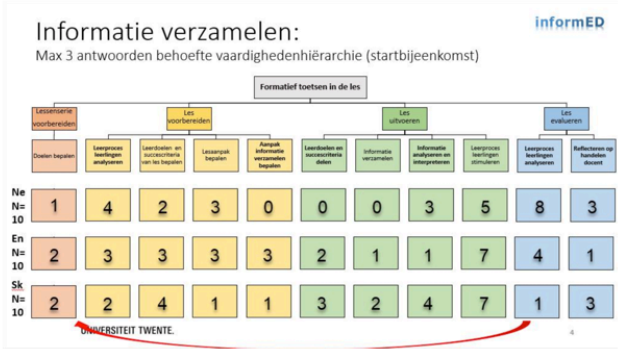


Vragen via Socrative.
Als meer dan 30% foute antwoorden worden gegeven, wordt dat specifieke deel herhaald. Als er minder dan 30% foute antwoorden worden gegeven, wordt dit onderdeel niet herhaald.



Stickers zijn geplakt via een top drie in Mentimeter in de eerste bijeenkomst. Van de resultaten is een screenshot gemaakt. De resultaten worden hier weergegeven en besproken. Doel uitleggen van alle informatie die is opgehaald d.m.v. deze Mentimeter.
Doel: informatie verzamen om zo een training te maken die aansluit bij behoeften (fase 2: studentenreacties ontlokken en verzamelen) (uitgewerkt in volgende dia's).

Het kan er bijvoorbeeld zo uit zien:



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Na de volgende groepssessie

- **Kan ik** manieren **bedenken** om leerdoelen en succescriteria te delen in mijn eigen les, bijvoorbeeld door het gebruik van 'exemplars'.
- **Kan ik** op lesfragmenten (zowel van mezelf als van collega's) **reflecteren** m.b.t. de vaardigheden formatief toetsen

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Les uitvoeren

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Vaardigheden	Hoe ziet succes eruit.....
3. Les uitvoeren	De leraar voert de les uit zoals voorbereid. De leraar **deelt leerdoelen en succescriteria** met de leerlingen, **verzamelt informatie** over hun leerproces, **analyseert en interpreteert** deze informatie tijdens de les en **stimuleert** op basis hiervan het leerproces.
3a. Leerdoelen en succescriteria delen	De leraar **deelt de leerdoelen en succescriteria** met leerlingen en zorgt ervoor dat ze helder zijn voor de leerlingen door hier op verschillende momenten tijdens de les aandacht aan te besteden.
3b. Informatie verzamelen	Tijdens de les **verzamelt** de leraar **informatie over het leren** van leerlingen t.o.v. de leerdoelen en succescriteria. De leraar maakt hierbij duidelijk dat er fouten gemaakt mogen worden. Het gaat niet om af te rekenen (cijfers) maar het gaat om inzicht te krijgen in het leerproces van leerlingen (realiseren van veilig en stimulerend leerklimaat).
3c. Informatie analyseren en interpreteren	De leraar **analyseert en interpreteert** de verzamelde informatie om te bepalen waar leerlingen staan t.o.v. de leerdoelen en succescriteria en om in te kunnen gaan op gemaakte fouten en misconcepties.
3d. Leerproces leerlingen stimuleren	De leraar **stimuleert het leerproces** van leerlingen door tips te geven en/of vragen te stellen die leerlingen verder helpen en door in te gaan op gemaakte fouten en misconcepties.

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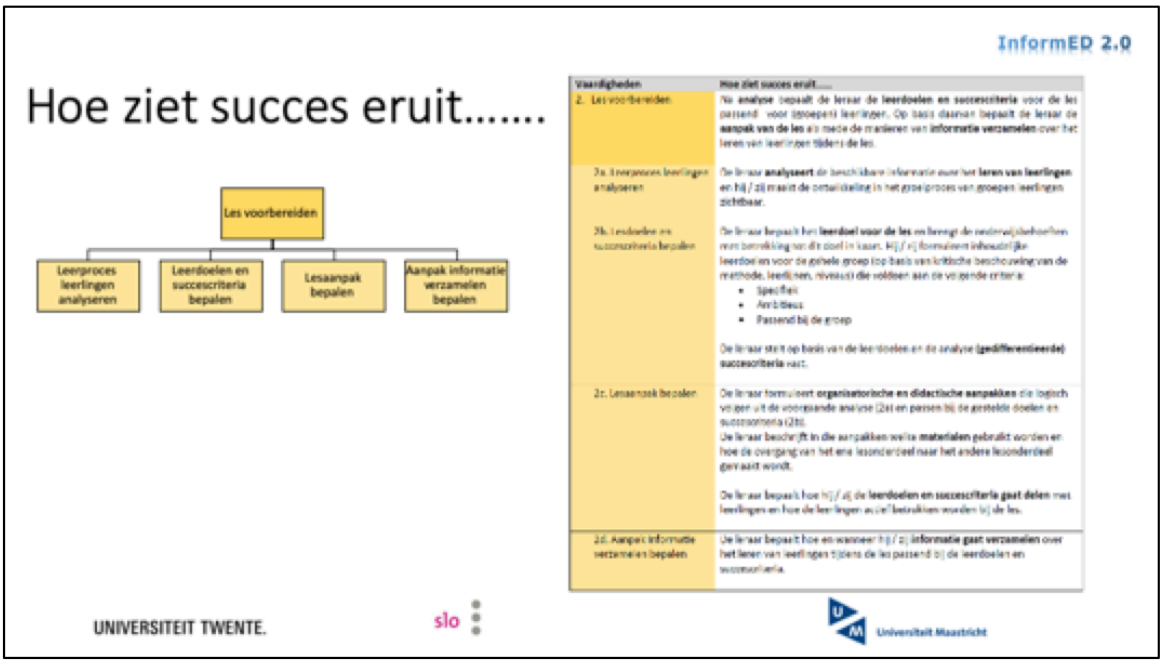
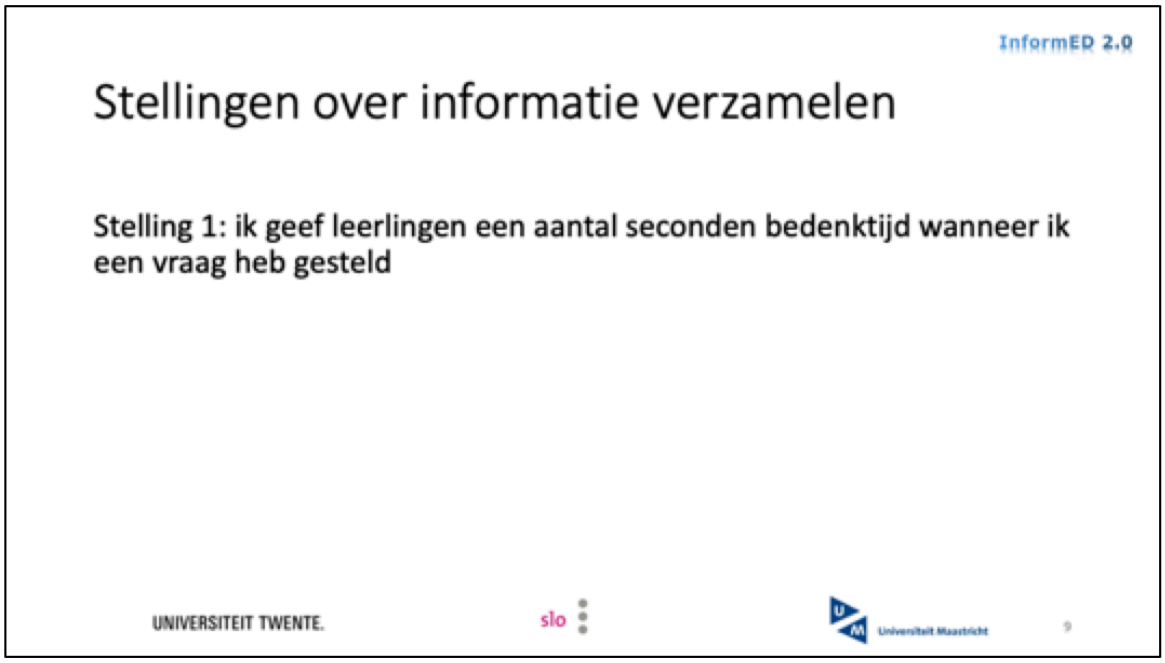
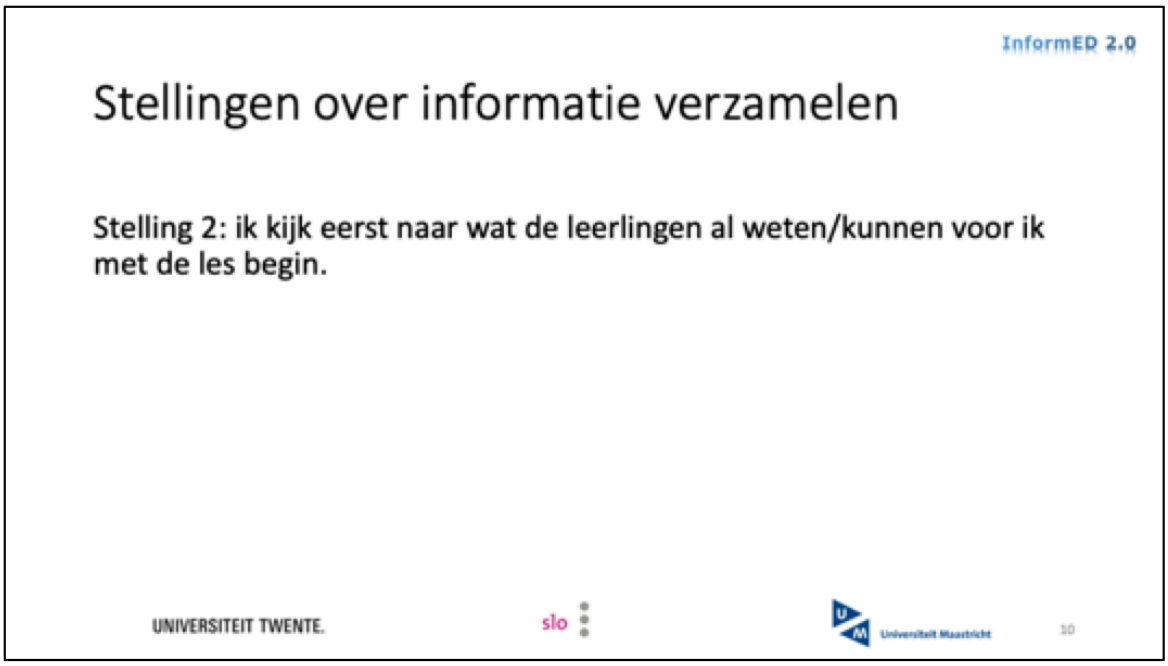




Aangeven met ja/nee via polls in Teams.
Eventueel random mensen om toelichting vragen via Pikme (app waarmee random beurten kunnen worden gegeven).
Het belang hiervan daarna aangeven (fase 2: studentenreacties ontlokken en verzamelen).



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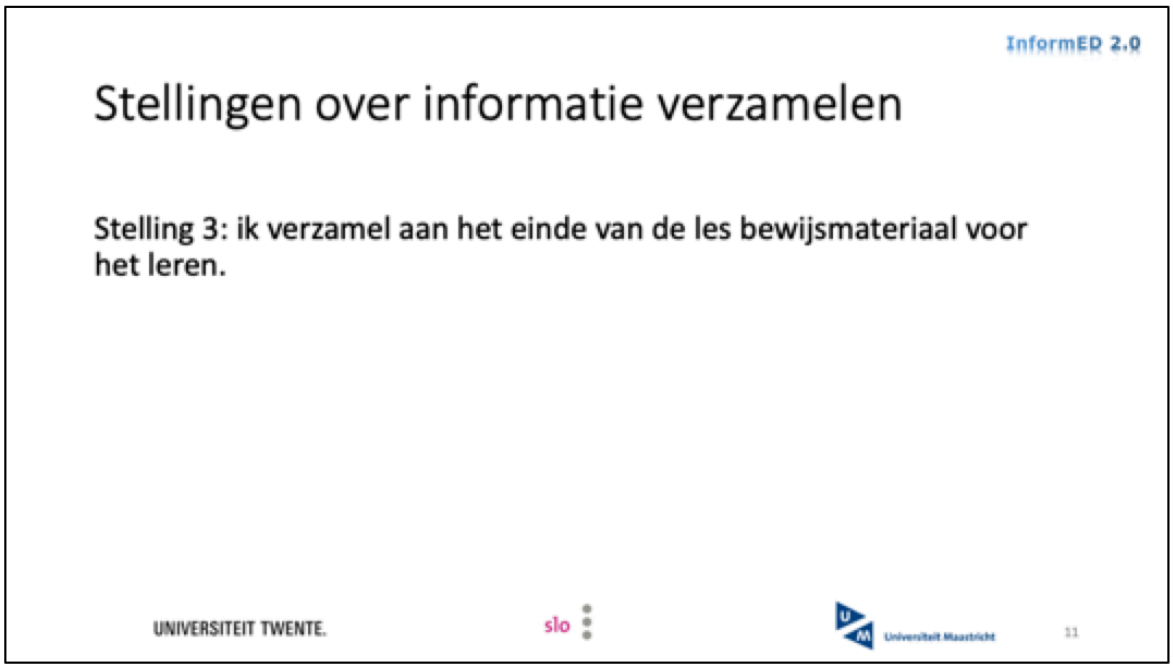

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Het belang hiervan daarna aangeven (fase 2: studentenreacties ontlokken en verzamelen).

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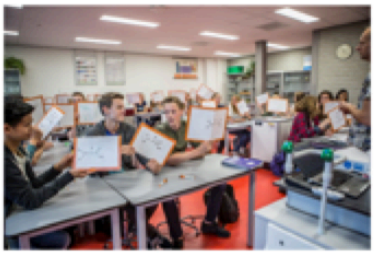
Stellingen over informatie verzamelen

Stelling 4: ik gebruik *whiteboardjes*/'wisbordjes' in de les.



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Aangeven met ja/nee via polls in Teams.
Eventueel random mensen om toelichting vragen via Pikme (app waarmee random beurten kunnen worden gegeven).
Het belang hiervan aangegeven en ook vertellen dat er wat met deze informatie gedaan moet worden (fase 2: studentenreacties ontlokken en verzamelen).

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Informatie verzamelen over het leren

- Je kunt pas de juiste informatie verzamelen als de **doelen en succescriteria** helder zijn.
- Je verzamelt informatie over **wat een leerling weet of kan**: het feit dat je er les over hebt gegeven wil nog niet zeggen dat de leerling het geleerd heeft.
- Verschillende vormen van data: discussies in de klas, vragen stellen, toetsen, mondeling, observaties, huiswerk etc.

- Fragment Dylan Wiliam: "het belang van informatie verzamelen"

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Video wordt ook op Padlet geplaatst.

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Toetsen: informatie verzamelen

Informeel informatie verzamelen over het leerproces, bv.: vragen in de klas, discussies in de klas, observeren
Assessment for learning

Formeel informatie verzamelen over het leerproces, bv.: proefwerken, so's, examens, externe toetsen
Opbrengstgericht werken

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Voorbeelden informatie verzamelen

Willekeurig beurten geven:

Lollipop sticks, classroom experiment
https://www.youtube.com/watch?v=PtZ1pmY0VzI

Exit ticket: https://www.youtube.com/watch?v=PWUxFSXEsC8

Hoe weet ik waar mijn leerlingen staan? 19 werkvormen:

Whiteboards:

Leerlingen beantwoorden individueel een vraag.

Docent loopt rond en observeert

Docent ziet in een oogopslag of de leerlingen kennis hebben.

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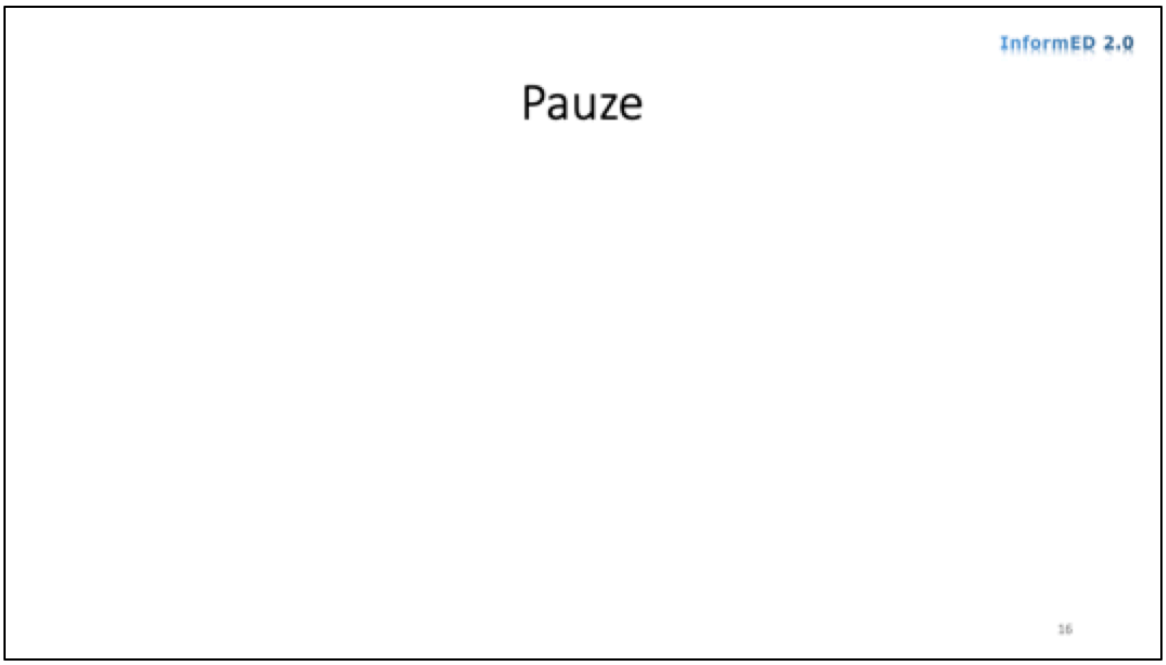
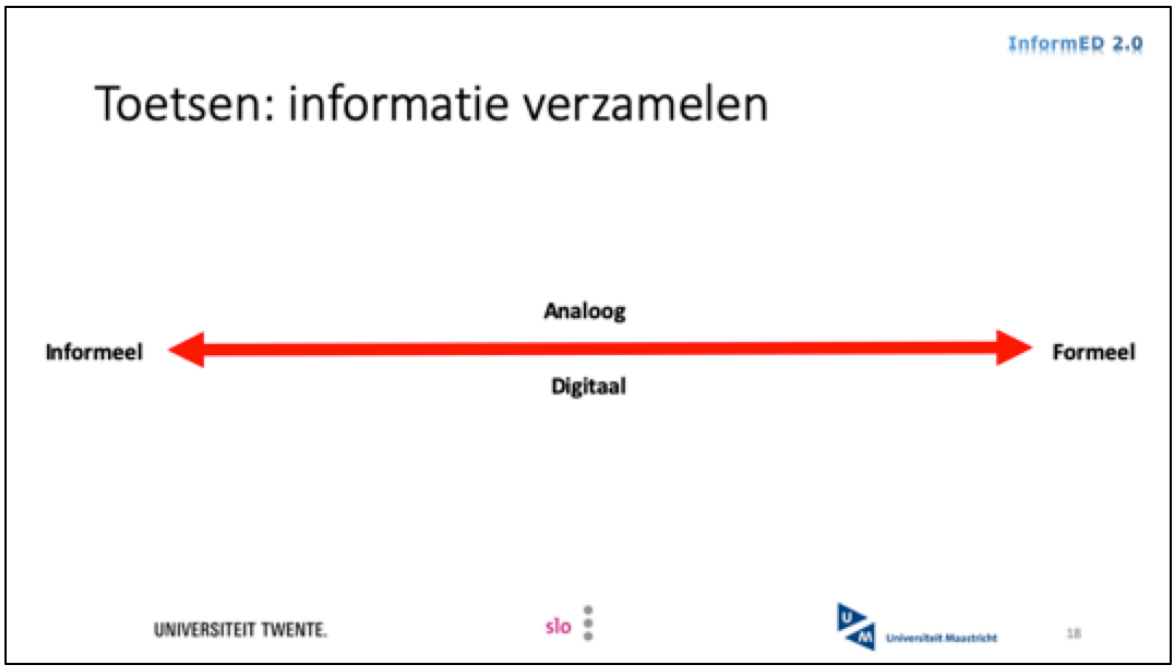


Kwartier pauze.

Deelnemers overleggen online/fysiek en vullen het in via Padlet.
Online samenwerken aan manieren om informatie te verzamelen (fase 2: studentenreacties ontlokken en verzamelen) die bewijs ontlokken van wat we willen weten (fase1: verwachtingen verhelderen).
Instructievideo over het invullen: https://www.youtube.com/watch?v=G6_bejBu4kQ



Online invullen via Padlet per groep.
Ieder groepje wijst iemand aan die het daarna plenair presenteert via Teams.

Sites ook te vinden op Padlet.

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Opdracht: voorbereiding groepsbijeenkomst + uitleg

- Toelichting op het werken met Pitch2Peer. (URL)
  - Neem een stuk van een les op waarin je informatie verzamelt om inzicht te krijgen in het leerproces van leerlingen.
  - Minimaal één fragment (maximaal 5 minuten per fragment) uploaden in Pitch2Peer.
  - Geef feedback op twee toegewezen video's van je eigen vak a.h.v. feedbackformulier in Pitch2Peer.
  - Maak een hele korte nieuwe video waarin de verbeterpunten te zien zijn en upload dit in Pitch2Peer.
- Lees hoofdstuk 4 uit formatieve assessment integreren in de praktijk (zie Padlet)
- Vul reflectieformulier in.

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Belang van nieuwe video aangeven (FE-cyclus dichten).

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Observatieformulier

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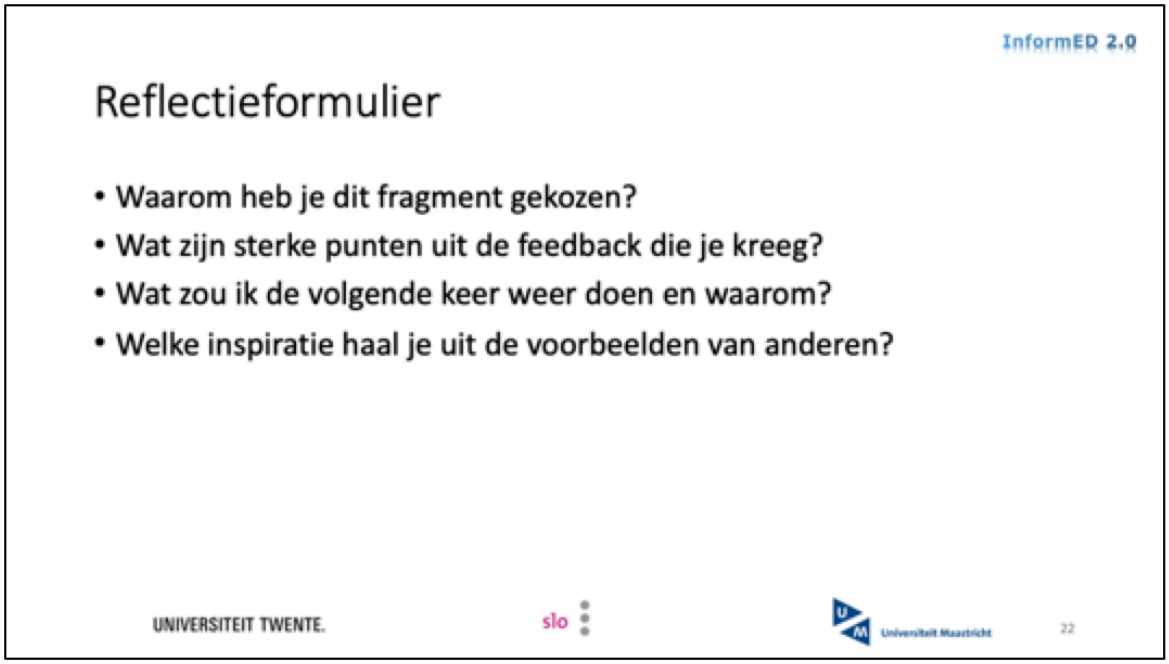
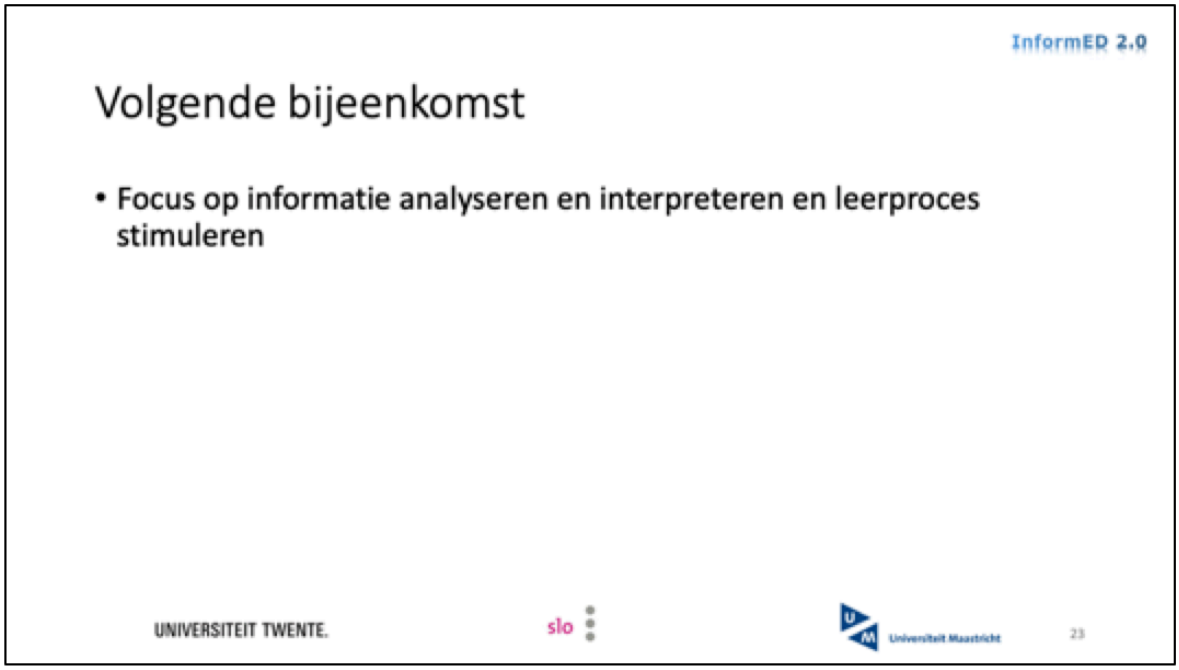
Deze afbeelding met formulier ingevoegd in Pitch2Peer.
Via daar vullen deelnemers in voor twee aangewezen video's en bespreken dit tijdens de fysieke groepsessies.



Ingevoegd in Pitch2Peer.



Kunnen gesteld worden via de chat.