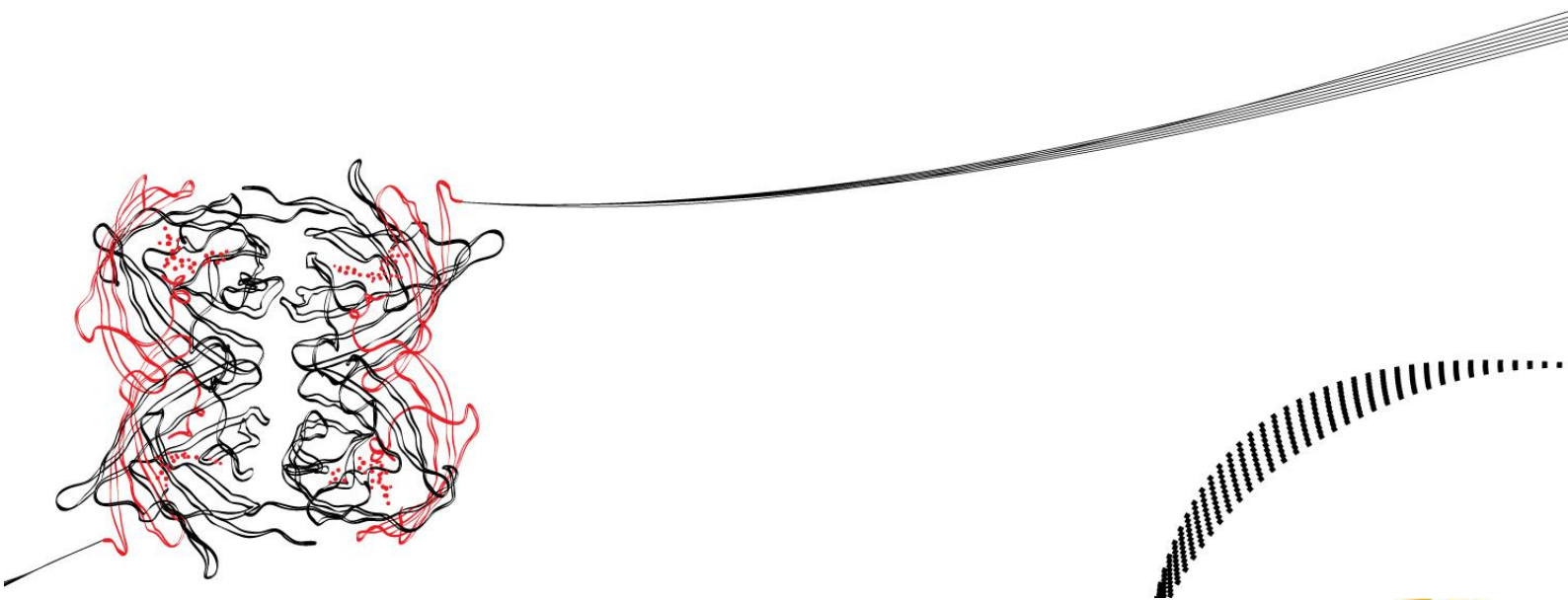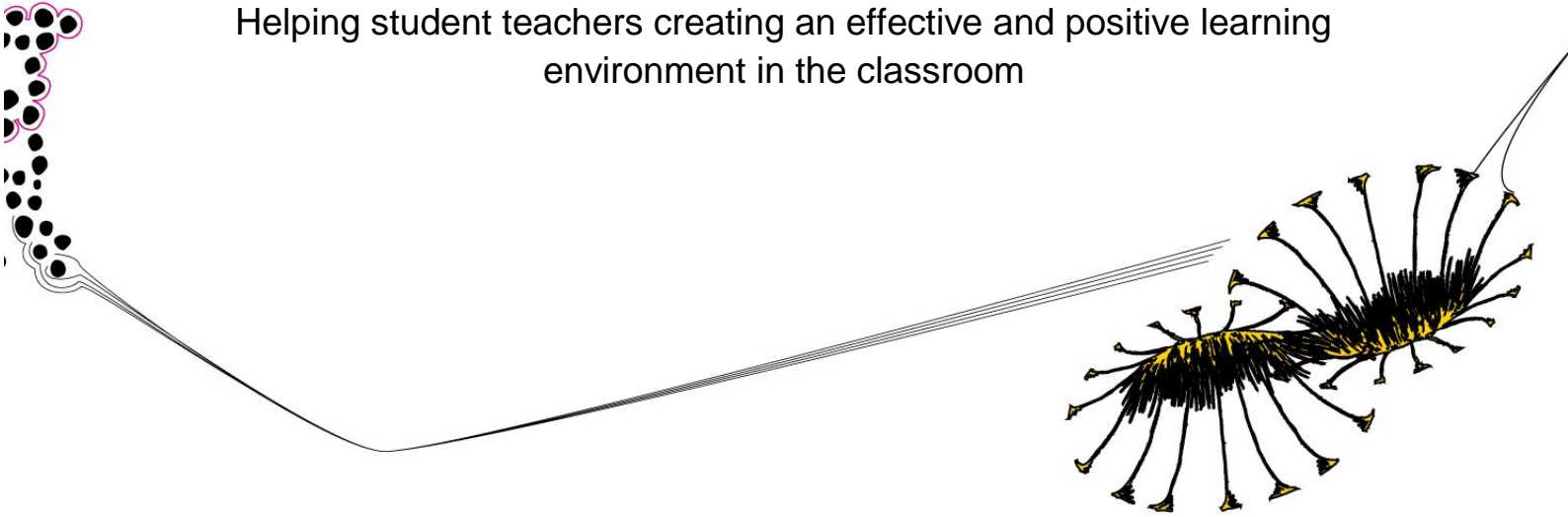# Simulating the complexity of the classroom

Helping student teachers creating an effective and positive learning environment in the classroom

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Windesheim

Title	Simulating the complexity of the classroom
Subtitle	Helping student teachers creating an effective and positive learning environment in the classroom
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Foreword

This thesis is the result of my final project at Windesheim University in Zwolle, which is also my completion of the Master Educational Science and Technology. I have enjoyed working on this final thesis, even though I had occasionally setbacks. I Hope you read my thesis which much pleasure, as much I had while I was working on this.

Before you start reading, in the first place I would thank some people, who have helped me during my final project. First of all I would like to thank my second supervisor (at the start of my final project mine first supervisor), Joke Voogt for the critical look at my research and the proper feedback, this has helped me in conducting my research. I would also like to thank my first supervisor, Susan McKenney, for the critical look at my research and the proper guidance

I would also like to thank my external supervisor Margreet van Oudheusden, for the clear expectations if I just did not get it, the proper guidance, helping searching for suitable literature and the excellent cooperation. I would like to thank Wim Trooster for the help in the statistical part of my research and the guidance he offered when Margreet van Oudheusden could guide me only via Skype, due to her illness. In addition, I would like to thank Geert Holwerda, master student at the University of Twente and working at Windesheim University, for selecting teachers and student teachers for my focus group, interview and questionnaire.

Finally, I would like to thank two people. Judith Dijk for helping me to calculate Cohen's Kappa and the last person I would like to thank is my mother, for always be there for me, listen to my experiences during my research and when I had a setback, she was the one who could motivate me again.

Zwolle, 30 May 2014

Laura Ruitenberg

Summary

In teacher training seems to be a gap between teacher training and practice (Scheeler, 2008). According to Scheeler (2008) this way teachers, who just start work have a limited repertoire of teaching strategies. They have difficulties transferring the obtained teaching techniques into the real classroom and they find it hard to maintain the learned teaching skills and teaching techniques over time (Freiberg, 2002; Scheeler, 2008). Beginning teachers feel not adequately prepared when they start teaching in the real classroom (M.A. van Oudheusden, personal communication, February 26, 2014). Therefore Windesheim University wonders if a simulation can contribute to reduce the gap between teacher training and practice. The selected context for this study is the teacher training institute of Windesheim University in Zwolle.

This study is a part of a small scale project at the teacher training institute of Windesheim University of Applied Sciences in the Netherlands. The goal of this study is to identify the content and pedagogical characteristics of a simulation that contribute to the acquisition of the necessary competences need to create a positive and effective learning environment in the classroom.

The method used for this study is the analysis phase of Educational Design Research. The analysis phase consists of three activities, (1) initial orientation, (2) literature review, and (3) field-based investigation (McKenney & Reeves, 2012). In the initial orientation the problem statement is described. After that, the conceptual framework is described, in which the concepts are explained. The last activity, field-based investigation, consists of a document analysis, focus groups, questionnaire and observations.

The results show that student teachers have several problems with the six research-based elements of Marzano, Marzano and Pickering (2003), (1) rules, expectations and procedures, (2) disciplinary interventions, (3) teacher-student relationship, (4) mental set, (5) student's responsibility for management, and (6) getting off to a good start. The results showed that student teachers experience less or no difficulties with building up positive teacher-student relationship, with the other five research-based elements they experience more problems. Student teachers and university teachers indicated a few similarities in problems looking at the other research-based elements, such as problems with the consequences of the rules, problems with the pace and alignment, problems with giving positive and negative feedback, problems with giving space to pupils and problems with relying on the power of the pupils. When looking at the needs, the most student teachers and university teachers found that, the teacher education pays sufficient attention to all these points, a few needs are appointed. The PBS approach can be used as a possible framework to overcome these problems. All the PBS-principles could be related to all seven competences of the teacher training institute. To practice solving these problems, a simulation could be developed.

The conclusion shows that a simulation could be developed for student teachers to be used during teaching training, taking several content characteristics into account, to respond to the advantages, disadvantages and to connect to the problems and needs of the student teachers and the university teachers. A simulation should be, (1) personalized, (2) motivating, (3) resembling reality, (4) approaching the complexity of the reality of the classroom, (5) cooperation, (6) reflection, (7) levels

and, (8) based on a blended learning model. The PBS framework can be used as guiding principles for learning the research-based elements in the simulation, i.c. the pedagogical characteristics.

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1. Introduction

Chapter 1 introduces the topic of this study: why this study and how this study is done. This chapter is organized in six sections. The first section describes the background of this study. Thereafter in section 1.1 the problem statement is described. Section 1.2 is the context, in which the study is performed, followed by section 1.3 the purpose of the study. Section 1.4 describes the practical and scientific relevance, this section is followed by the overview of the thesis, described in section 1.5.

Children need highly effective and qualified teachers in education, because effective and qualified teachers are essential to pupils' success (Reinke, Herman, & Stormont , 2013; Scheeler, 2008). At this moment teacher education institutes are under high pressure to ensure that student teachers have prepare them for the actual world of teaching (Freiberg, 2002; Goh & Matthews, 2011). The teacher education institutes are not only under high pressure, but are also the centre of debate, because research shows that the teacher education institutes are not adequately preparing student teachers for the profession (Ferry, Kervin, Cambourne, Turbill, Puglisi, Jonassen, & Hedberg, 2004).

Teachers who have just completed the teacher training programme have a limited repertoire of teaching strategies. They have difficulties in transferring the acquired teaching techniques into practice and maintaining the acquired teaching skills and teaching techniques over time (Freiberg, 2002; Scheeler, 2008). Research shows that this is due to a gap between acquiring effective pedagogical skills in student teacher preparation and the transmission of these skills to the classroom (Scheeler, 2008). According to Freiberg (2002) "they are not taught how to establish the positive, organized learning environment necessary for them to teach and for students to learn" (p56). Through trial and error teachers develop their repertoire of teaching strategies. This may take several years, which often results in losing these teachers for the profession in an early stage (Freiberg, 2002). Many student teachers experience also a medium level of stress during teaching practice (Malik & Ajmal, 2010). High levels of stress for student teachers can be lead to problems in class control and disturbance in the classroom (Malik & Ajmal, 2010). Student teachers are facing a big challenge: how to teach and learn in a complex class situation, with groups of varying size and abilities and available materials (Christensen, Knezek, Tyler-Wood, & Gibson, 2011; Melnick & Meister, 2008)?

One of the main elements of the teacher training programmes are practical experiences in everyday practice of the classroom (Farrell, 2008). Most of the teachers strive to give effective lessons to improve the learning outcomes of the pupils and to draw on the knowledge and skills they have learned during their student teacher degree (Mergler & Spooner-Lane, 2012).Research by Scheeler (2008) shows a gap between the skills that are taught in the teacher training programme and using those skills into the classroom. According to Scheeler (2008) "even when pre-service teachers learn effective teaching techniques they may or may not transfer those skills into their own classrooms" (p. 147). In the research of van Oudheusden (2012b) she concluded that it is difficult for student teachers to learn the professional skills in the complex environment of the classroom. When more is known about the concerns faced by student teachers during their teacher training, the greater the possibility of reducing stress and improving their success and maximizing the benefits of the practicum for them (Goh, & Matthews, 2011).

1.1 Problem Statement

Literature discussed in the introduction states that there seems to be a gap between teacher training and practice (Scheeler, 2008). Teachers have a limited repertoire of teaching strategies, have difficulties transferring the obtained teaching techniques into the real classroom and maintaining the learned teaching skills and teaching techniques over time (Freiberg, 2002; Scheeler, 2008). This is complemented by the fact that student teachers are often overwhelmed by the complexity of the classroom, during their internships and when they just start working. Student teachers often feel insufficiently prepared for the actual classroom (M.A. van Oudheusden, personal communication, February 26, 2014). According to Scheeler, Bruno, Grubb and Seavey (2009) the student teachers "know what to teach and how to teach it but we may be missing a critical component in teacher preparation, i.e., teaching future teachers to apply their newly acquired skills to their own classrooms" (p. 190). Windesheim University would like to know how to reduce this gap between the student teacher programme and everyday complexity of the classroom.

1.2 Context

This study took place at the teacher training institute Windesheim University in Zwolle, because this problem statement is applicable in this specific setting. This university offers a four year study for student teachers who would like to become a teacher at a primary school. During this study two university teachers are involved in this study and 14 student teachers, including 13 third-year student teachers and one fourth-year student teacher. Within the teacher training institute of Windesheim University, student teachers are actively using and/or integrating ICT in education. In addition, during this study PBS is one concept which is discussed. University of Windesheim has a centre of expertise on Positive Behaviour Support, which aims to support the implementation of PBS in the Netherlands and in doing so to improve the quality of education. The Centre tries to achieve this goals by training and supervising school personnel in the school, conducting practical research and by developing of knowledge and sharing the knowledge that is discussed (Expertisecentrum PBS, 2014).

1.3 Purpose of the study

This study is part of a small scale pilot project at the teacher training institute of Windesheim University of Applied Sciences in the Netherlands. Windesheim University would like to know, as mentioned in the problem statement, if the teacher training programme contributes enough to narrow the gap between teacher training and practice. Due to this, Windesheim University poses the question if a simulation can contribute to reduce this gap. Therefore, the purpose of the study is to identify the content and pedagogical characteristics of a simulation that contribute to the acquisition of the necessary competences for student teachers for creating a positive and effective learning environment in the classroom.

1.4 Practical and scientific relevance

As discussed in the introduction, teachers seem not always adequately prepared for the educational profession, which may lead to teachers turn over. The teacher training is very costly, so it

is important to keep the teachers in the educational field. To work on this, teacher needs to be adequately prepared for the profession, so if more known about the concerns that student teachers are facing during their training and practicum, the larger the opportunity for reducing stress and improving success in practicum (Goh & Matthews, 2011). Therefore at University Windesheim raises the question if a simulation could contribute to reduce the gap between what is learned at the teacher training institute and transfer this to the real classroom. Further, the research of Goei and Kleijnen (2009) show that teachers have difficulty in handling pupils with behavioural problems, which may lead in some cases to burn outs. Prevention is therefore important.

There is a lot of evidence for the effectiveness of using the framework of Positive Behaviour Support for creating an effective and positive learning environment, but limited research is done about the use of a simulation in student teacher education (Hixon &So, 2009). Nothing is known about applying PBS principles for creating a simulation. Therefore it is important to do more research into the subject of using the framework PBS for creating an effective and positive learning environment in a simulation that might help student teachers, to reduce the gap between teacher training and practice. In addition it is also important to do more research into the use of a simulation during teacher training and if a simulation can provide opportunities to practice the competencies that are necessary to deal with the everyday classroom complexity. Studies on the use of simulation in teacher training are just emerging, so there is limited literature about it (Christensen et al., 2011; Clarke, 2013 as cited in Dieker Rodriquex, Lignugaris/Kraft, Hynes, & Hughes, 2014; Dieker et al., 2014; de Jong, Lane, & Sharpt., 2012; Hixon & So, 2009; Judge, Bobzien, Maydosz, Gear, & Katsioloudis, 2013; Sawchuk, 2011 as cited in Bush, Hall, Scott-Simmons, & Saulson, 2012).

1.5 Overview of the Thesis

The thesis consists of 7 chapters. Chapter 1 describes the background of this study, attention is paid to the context, problem statement, purpose of the study, practical and scientific relevance and overview of the thesis. Chapter 2 is the theoretical framework and shows the theoretical background on which this study is based. Chapter 3 describes the method, in which the following points are discussed, research design, respondents, instrumentation, procedures and data analysis. The results of this study are described in chapter 4. Chapter 5 describes the conclusion and discussion. Chapter 6 includes all references that are used in this study and in the last chapter 7, all the appendices are outlined.

2. Theoretical framework

Chapter 2 is organized in five sections. Section 2.1 describes the six research-based elements of Marzano, Marzano and Pickering (2003). This is followed by section 2.2 which represents the PBS framework, that can be used as a framework for learning this research-based elements. Section 2.3 describes the definition of the simulation, types of simulations, the current state of the simulation, simSchool and advantages and disadvantages of a simulation This is followed by section 2.4 which represents a model in which all the three concepts are operationalized. Section 2.5 describes the main research question and the three sub questions for this study.

2.1 Positive and effective learning environment in the classroom

Well-managed classrooms are an essential element for effective teaching and learning (Lane, Menzien, Bruhn, & Crnobori, 2011; Mahon, Bryant, Brown, & Kim, 2010; Marzano, Marzano and Pickering, 2003). Without an orderly and purposeful environment, a teacher cannot create an environment where learning and collaboration is promoted (Lane et al., 2011). Well managed classrooms support the learning process of the pupils and increase academic learning (Gettinger, 1968 as cited in Lane et al., 2011). A well-managed classroom is created by the teacher himself (Marzano, Marzano & Pickering, 2003). This creates an environment in which the pupils know how to communicate with other pupils and with the teacher, in which pupils feel appreciated and the pupils are motivated to learn (Lane et al., 2011). Marzano, Marzano and Pickering (2003) conclude that pupils in classes run by effective teachers perform better than pupils in classes with least effective teachers, this is shown in Figure 2.1. In Figure 2.1 pupils start on the 50th percentile. In the first scenario pupils have an average school and an average teacher, the performance will still be 50th percentile. This means that the pupils have learned enough to continue at the same pace with their fellow pupils. In the second scenario, if the pupils have a least effective school and a least effective teacher, the pupils will dropped to the 3th percentile. This indicates that the learning is sporadic and unorganized, which will influence the student results considerably. In the third scenario, the pupils have a most effective school and a least effective teacher. After two years the pupils will leave the class with 37th percentile. In the fourth scenario the pupils have a most effective school and most effective teacher. This indicates that the pupils enter the class at the 50th percentile and leave the class at the 96th percentile. In the final scenario the pupils now leave the classroom at the 63th percentile with a least effective school and a most effective teacher. This means that an individual teacher has a major impact on the learning of the pupils. According to Marzano, Marzano and Pickering (2003) "even if the school they work is highly ineffective, individual teachers can produce powerful gains in student learning" (p. 3). Thus student teachers need a good preparation and training in order to be able to create a positive and effective learning environment in the classroom.
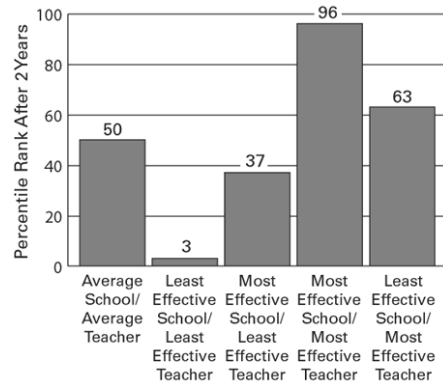
Figure 2.1. Effects of a School vs. A Teacher on Student Entering at 50th Percentile. Adapted from "Classroom management that works: research-based strategies for every teacher," by R.J. Marzano, J.S. Marzano and D.J. Pickering, *Association for Supervision and Curriculum Development,*

The results from a meta-analysis, that is based on the results of more than 100 research reports between 1967 and 1996, of Marzano, Marzano and Pickering (2003) show that there are six major research-based elements for teachers to create an effective and positive classroom learning environment in the classroom: (1) rules, expectations and procedures, (2) disciplinary interventions, (3) teacher-student relationship, (4) mental set, (5) student's responsibility for management, (6) getting off to a good start (Marzano, Marzano, & Pickering, 2003; Reinke, Herman, & Stormont, 2013). These elements are elaborated below in depth. When teachers are aware of these six elements and are trained to use these techniques, this can positively influence teacher behaviour, which may lead to positive changes in pupil behaviour and has also a positively influence on pupils performance (Marzano, Marzano, & Pickering, 2003).

2.1.1 Rules, expectations and procedures

Developing a set of rules, expectations and procedures in the classroom is fundamental for classroom management (Marzano, Marzano, & Pickering, 2003; Newcomer, 2009; Reinke, Herman, & Stormont, 2013). According to Reinke, Herman and Stormont (2013) "these rules need to be developmentally appropriate, stated positively, and systematically taught" (p. 40). Newcomer (2009) adds to these criteria that rules should be observable, measurable, simple and kept to a minimum. Rules communicate the desired behaviour in the classroom, which are necessary for order in the classroom and a functioning learning environment. The rules should be in line with the expectations of the school (Newcomer, 2009). Expectations refer to general standards of behaviour (e.g. be respectful, be responsible and be cooperative) leading to student success inside and outside the classroom and school. These expectations should be challenging, appropriate and controllable, so that the pupils see the expectations as valuable (Hattie, 2009). The rules and procedures which will be established in the classroom should be developed in collaboration with the pupils (Marzano, Marzano, & Pickering, 2003). Besides rules and expectations, procedures are also an important element for creating a positive and effective learning environment in the classroom (Newcomer, 2009). The procedures should be explained to the pupils and be practiced with the pupils. The teacher provides

feedback on it. This should lead to appropriate behaviour and this appropriate behaviour should be encouraged. The procedures should be in line with the school wide expectations (Newcomer, 2009). In the end procedures will turn into routines (Lane et al., 2011). Clear routines ensure that pupils are able to complete tasks and that inappropriate behaviour in the classroom is minimized (Morgan & Ellis, 2011; Newcomer, 2009). It is important for common activities and transitions to establish routines (Newcomer, 2009).

This research-based element is a crucial aspect of creating an effective and positive learning environment in the classroom, because pupils behaviour and pupils performance are influenced by the rules and procedures (Marzano, Marzano, & Pickering, 2003). This creates possibilities for positive interactions between pupils and teachers and it will contribute to the feeling that the classroom is a safe place to learn (Marzano, Marzano, & Pickering, 2003).

The average effect size by design and implementing rules and procedures is -.76 (Marzano, Marzano, & Pickering, 2003). According to Marzano, Marzano and Pickering this means "that across the various grade levels the average number of disruptions in classes where rules and procedures were effectively implemented was 28 percentile points lower than the average number of disruptions in classes where that was not the case" (p. 14). These data from the meta-analysis of Marzano, Marzano and Pickering (2003) indicate that designing and implementing rules and procedures have a large effect on pupils behaviour.

2.1.2 Disciplinary interventions

Disciplinary interventions refers to the interventions that can be used when pupils follow or do not follow the established rules, procedures and expectations (Marzano, Marzano & Pickering, 2003). If the rules, procedures, expectations, disciplinary interventions and consequences are developed and shaped to the needs of their own classrooms, this can lead to the development of a positive relationship between teachers and pupils and can help to create a productive and positive learning environment (Marzano, Marzano, & Pickering, 2003).There should be a balance between consequences for inappropriate behaviour and consequences for appropriate behaviour (Marzano, Marzano, & Pickering, 2003). A compliment is a consequence for appropriate behaviour, this can be verbal or non-verbal (Lane et al., 2011). Another consequence for appropriate behaviour is a reward, a reward system could be an effective way to shape and support positive behaviour (Lane et al., 2011) It is essential to have clear consequences for inappropriate behaviour. These consequences need to be established in advance and the pupils need to be aware of the consequences (Lane et al., 2011). A reminder helps the pupil to exhibit appropriate behaviour, so that the teacher does not need to use disciplinary interventions (Lane et al., 2011). A teacher who combine effective disciplinary measures with other elements of classroom management, loses no time in responding to inappropriate behaviour. The teacher creates more time to teach (Lane et al., 2011).

The average effect size of disciplinary interventions is -.91 (Marzano, Marzano, & Pickering, 2003). According to Marzano, Marzano and Pickering (2003) this means "that in classes where disciplinary procedures were used effectively, the average number of classroom disruptions was .909 standard

deviations less than the average number of disruptions in classrooms that did not effectively employ disciplinary procedures" (p. 8).

2.1.3 Teacher-student relationship

The relationship between teachers and pupils is important for creating a positive and effective learning environment (Hattie, 2009; Marzano, Marzano, & Pickering, 2003). Without a positive teacher-student relationship, the chances are that pupils will oppose against the developed set of rules, expectations, procedures and disciplinary interventions (Marzano, Marzano, & Pickering, 2003). When the teacher is person-centred, the teacher will notice more involvement, more respect and less resistant behaviour from the pupils. The pupils are more likely to perform better academically (Cornell & Mayer, 2010; Hattie, 2009). Trust and respectful teacher-student relationship is the start of higher pupil performance (Cornell & Mayer, 2010; Hattie, 2009). The teacher-student relationship will also improve when teachers work in an environment where the teacher self-efficacy is promoted (Goei, van Oudheusden, Bosma, Klein, & Blok, 2013).

The average effect size of teacher-student relationship is -.87 (Marzano, Marzano, & Pickering, 2003). This means that in classes where the teacher-student relationship is good, the average number of classroom disruptions is .869 standard deviations less than the average number of disruptions in classrooms that have no good teacher-student relationship. Hattie (2009) agreed to this, because according to Hattie (2009) "building relations with students implies agency, efficacy, respect by the teacher for what the child brings to the class (from home, culture, peers), and allowing the experiences of the child to be recognized in the classroom" (p. 118). In order to build this relationship, teachers must master skills like listening, ability to empathize, being supportive and have positive attention to others (Hattie, 2009).

2.1.4 Mental set

According to Marzano, Marzano and Pickering (2003) "effective managers approach the classroom with a specific frame of mind, a specific mental set" (p. 65). It is, therefore, about the way the teacher is thinking and behaving in the classroom (Marzano, Marzano, & Pickering, 2003). According to Marzano, Marzano and Pickering (2003) "the mental set necessary for effective classroom management requires teachers to cultivate a mindful stance relative to their withitness and emotional objectivity" (p.66). Withitness is about being alert, and identifying quickly and adequately misbehaviour of the pupils, trying to prevent it and if present respond to it effectively. It is not about how the teacher deals with disruptive behaviour (Marzano, Marzano, & Pickering, 2003). Emotional objectivity refers to the various aspects of classroom management, in which the teacher becomes not emotionally involved concerning the results of the pupils. Interacting with pupils on a business, matter-of-fact manner, is especially important by consequences for misbehaviour (Marzano, Marzano, & Pickering, 2003). How a teacher behaves in the classroom against pupils and interact with pupils influences the self-esteem of pupils and pupils perceptions of each other (Montague & Rinaldi, 2001). The study of Montague and Rinaldi (2001) showed that pupils at risk are treated more negatively, get more neutral and non-academic responses and are less time engaged academically. Montague and Rinaldi (2001)

suggested therefore that teacher preparation programmes should focus on effective research-based practice, such as Positive Behaviour Support, in order to respond appropriately to pupils at risk.

The meta-analysis of Marzano, Marzano and Pickering (2003) shows an average effect size of -1.29 (Marzano, Marzano, & Pickering, 2003). This is the largest effect size in comparison with rules and procedures (-.76), disciplinary interventions (-.91) and teacher-student relationship (-.87). This means that in classes where teachers have a positive mental set, the average number of classroom disruptions was .1.294 standard deviations less than the average number of disruptions in classrooms that did not effectively employ mental set (Marzano, Marzano, & Pickering, 2003).

2.1.5 Student's responsibility for management

In the previous four points the actions teachers must take to ensure an effective and positive learning environment are addressed. Not only the teachers are responsible for creating a positive and effective learning environment in the classroom, but also the pupils (Marzano, Marzano, & Pickering, 2003). Self-discipline, self-management, self-regulation, self-control and social skills are concepts that covered student's responsibility for management (Marzano, Marzano, & Pickering, 2003). Providing choices for class activities to pupils creates positive behaviour in the classroom (Lane et al., 2011). Pupils can also make their own choices in relation to the way they want their behaviour to be reinforce. This ensures pupil independency, productivity and inclusion (Ruef, Higgins, Glaeser, & Patnode, 1998).

The average effect size of teaching pupil general responsibility strategies is -.69 (Marzano, Marzano, & Pickering, 2003). According to Marzano, Marzano and Pickering (2003) "this means that responsibility strategies are associated with a decrease of 25 percentile points in disruptive behaviour" (p. 77).

2.1.6 Getting off to a good start

 At the beginning of the school year teachers can use techniques and considerations to getting off to a good start (Marzano, Marzano, & Pickering, 2003). At the beginning of the school year, it is important to introduce rules and procedures and to allow pupils understanding of the rules and procedures (Marzano, Marzano, & Pickering, 2003). Finding shows that teachers also spend time to ensure that management activities were: (1) understood by pupils, (2) generally accepted by pupils, and (3) practiced until they became routine (Marzano, Marzano, & Pickering, 2003). This is also confirmed by Lane et al. (2011) and Horner, Sugai, Todd and Lewis-Palmer (2005). They report that the expectations for the pupils should be taught in both words and actions. Both good and bad examples of desired behaviour should be occurred (Lane et al., 2011). Once the rules and procedures are acquired, it is important that teachers acknowledge the pupils for following the expectations (Newcomer, 2009). This ensures that more pupils follow the rules and procedures, which contributes to an effective and positive learning environment (Marzano, Marzano, & Pickering, 2003; Newcomer, 2009).

2.1.7 Problems

In Figure 2.2 Klassen and Chiu (2010) mentioned that student teachers who have just graduated have zero efficacy on teaching strategies, classroom management and student engagement.

EFFECTS ON TEACHERS' SELF-EFFICACY

Years of Experience's effects on 3 Teacher Efficacies

Figure 2.2. Relationship of years of experience with three teacher self-efficacy variables (teaching strategies, classroom management and student engagement) based on the structural equation model results. Adapted from "Effects on Teachers' Self-Efficacy and Job Satisfaction: Teacher Gender, Years of Experience, and Job Stress," by R.M. Klassen and M.M. Chiu, *Journal of Educational Psychology*, 102 (3), p. 747.
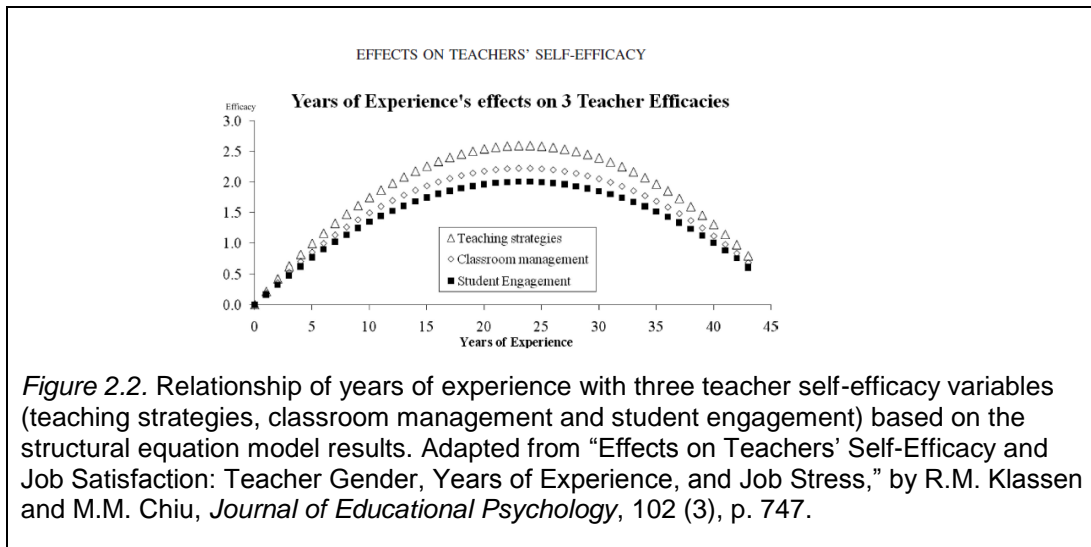
Teachers who have just completed the teacher training programme have higher chances of turnover than teachers who are older and more experienced (Curtis, 2012). This is one of the reasons why the teacher education institutes are under high pressure to ensure student teachers have high quality preparation, to prepare them for the actual world of teaching (Freiberg, 2002; Goh & Matthews, 2011). The more is known about the concerns faced by student teachers during their practicum, the higher the possibility of reducing teacher stress, improving their success and maximizing the benefits of the student teacher practicum for them (Goh & Matthews, 2011).

Veenman (1984) appoints eight problems, in rank order, that are most common among teachers that are new to the profession: (1) classroom discipline, (2) motivating pupils, (3) dealing with individual differences, (4) assessing pupils' work, according to Veenman (1984) this is about "accumulating reliable information and acting as an evaluator were problematic activities" (p. 156), (5) relationship with parents, this is mainly about the preparation of the novice teachers, organizing contact evenings with parents, the contacts with parents, parents does not show interest in their pupils, parents does not show interest in the novice teachers ideas and the lack of confidence of the parents toward the novice teachers, (6) organization of class work, (7) insufficient and/or inadequate teaching materials, and (8) dealing with problems of individual pupils.

Kent (2000) showed that beginning teachers have the mostly have problems with "having adequate time for planning and preparation", "having every student work up to his or her ability", and "providing for individual learning differences". In addition there are twelve common problems that beginning teachers experience, who are divided into six categories, (1) classroom management, includes "maintaining order, quiet or control", "getting students to work independently", and "eliminating inappropriate student behaviour", (2) motivation, includes "having all students participate in class", "having students value learning", "getting students to enjoy learning for its own sake", (3) administrative tasks, includes "performing administrative functions and paperwork" and "getting and

using anecdotal information about students", (4) student-related common problems, includes "assisting students with special educational needs" and "having too many students" and (5) curricular issue, includes "finding new instructional materials and supplies" (Kent, 2000).

Romano (2007) sees four major concerns that new teachers experience: (1) classroom management, includes according to Romano (2007) "issues related to overall student behavior in the classroom and techniques used to gain participation in classroom activities and increase student motivation for learning" (p. 68), (2) external policy, includes according to Romano (2007) "external factors that the teacher had no control over that governed how the school, district, or educational system was run, including instances in which the teachers felt too many external demands had been placed on them at one time" (p. 68), (3) personal issues, includes according to Romano (2007) "teacher concerns or accomplishments that were highly personal in nature and, thus, separate from actual teaching episodes. These included issues such as feeling more secure in their surroundings, finding more time, and being organized" (p. 68), and (4) content and pedagogy, includes according to Romano (2007) problems "related to having command of a particular content area and knowing how to teach it effectively to a specific group of students, including planning and considering how to best teach what is needed in the amount of time allotted" (p. 68). These problems with new teachers are caused by several factors, according to Veenman (1984). One factor is the quality of teacher education (Veenman 1984, as cited in Kent, 2000).

The articles of Veenman (1984), Kent (2000) and Romano (2007) show that teachers who are new to the profession have the most problems with classroom management and classroom discipline. According to Romano (2007) "teacher education and induction programs might focus on classroom management prior to and throughout the first year of teaching" (p. 75).

According to Lewis (2010) "educators cannot 'make' pupils learn or behave. Educators can create environments that create the likelihood that pupils learn and behave. Environments that increase the likelihood are guided by a core curriculum and implemented with consistency and fidelity" (p. 5). Positive behaviour support is a way to create such an environment (Goei et al., 2013; Newcomer, 2009).

2.2 Positive behaviour support

Positive behaviour support (PBS) is a school wide and systematic approach focused on creating a positive, predictable and safe school environment for all pupils. It is increasingly popular among schools in the United States (Bradshaw, Koth, Thornton, & Leaf, 2009; Bradshaw, Mitchell, & Leaf, 2010). In 2010 it was estimated that approximately 9.000 schools around the United States are implementing this approach, including 44 states in the United States and other countries around the world, such as Norway, Canada and Australia (Horner, 2009 as cited in Bradshaw, Mitchell, & Leaf, 2010). The goal of PBS is to improve the academic performance and to create a healthy social environment, which promotes pupils learning (Golly & Sprague, 2009). PBS focuses on strengthening positive behaviour, prevent and reduce disruptive behaviour, prevent academic failure by creating a positive and social environment and changing systems, learning skills and appreciating positive

behaviour (Bradshaw et al., 2009; Horner et al., 2005; Newcomer, 2009; Ruef et al., 1998; Goei et al., 2013). PBS is a preventive approach and is focused on all pupils. It is shown to reduce the frequency of problem behaviour, serious problems of at-risk pupils and enhances academic results. It also helps pupils to learn better ways to express their feelings and needs (Newcomer, 2009; Ruef et al., 1998).

PBS is a framework and not a method. PBS applies five important principles guiding the PBS framework: (1) working school wide, (2) prevention, (3) positive approach, effective rules, teaching behavioural expectations and consequences, (4) decision-making on the basis of data and (5) collaboration with parents and chain partners (Bradshaw et al., 2009; Goei, Nelen, van Oudheusden, de Bruïne, Piscaer, Roozeboom, Schoorel, & Blok, 2010/2011; Goei et al., 2013; Hieneman, Dunlap, & Kincaid, 2005; Horner et al., 2005; Horner, Sugai, Smolkowski, Eber, Nakasato, Rodd, & Esperanza, 2009; Ruef et al., 1998; Warren, Bohanon-Edmonson, Turnbull, Sailor, Wickham, Griggs, & Beech, 2006).

2.2.1 Working school wide

As previously described PBS needs to be implemented school wide (Bradshaw et al., 2009; Bradshaw, Mitchell, & Leaf, 2010; Goei et al., 2010/2011). Within PBS it is assumed that an approach in one classroom only is less powerful than a school wide approach, where teachers, parents and other chain partners working together (Goei et al., 2010/2011). When a school chooses to implement PBS, 80 percent of all teachers should support the implementation of PBS. If the school decides to implement PBS, a PBS team is formed with the school director, representatives of teachers, support staff and parents. First of all the vision of the school is formulated with the values and norms, from here expectations are formulated (Goei et al., 2010/2011). These expectations are general standards of behaviour (e.g. be safe, be responsible, be respectful, be cooperative) which serve as a framework (Goei et al., 2010/2011; Newcomer, 2009). From these expectations the PBS team could establish behavioural rules for the most important areas in the school, such as rules for the classroom, playground, hallway, bathroom and other rooms (Goei et al., 2010/2011). These rules should be taught to all pupils in the first week of the new school year and during the school year regularly return to these taught rules (Sprague & Golly, 2004). It is important that the teachers have the same expectations and rules, so the pupils know what all the teachers expected from them in the classrooms and in common areas (Sprague & Golly, 2004). Good behavioural rules at the school level, should be developed together with pupils, the rules should be positively stated and be based on the school wide values (e.g. safety, respect and responsibility) and all the pupils and teachers should know the rules (Sprague & Golly, 2004). If the teachers are not clear about behavioural expectations, then the teachers punish rather than give pupils positive feedback (Sprague & Golly, 2004). This can be linked to all research-based element for creating an effective and positive learning environment (Marzano, Marzano, & Pickering, 2003). PBS teams collect and analyse data, design, do and evaluate the interventions and plan their activities (Hieneman, Dunlap, & Kincaid, 2005).

2.2.2 Prevention

The three tiered prevention model is a school wide system for prevention (Figure 2.3), this model aims to prevent disruptive behaviour by creating a three layered system of support (Bradshaw, Mitchell, & Leaf, 2010; Goei et al., 2010/2011). All pupils receive support through this model (Bradshaw, Mitchell, & Leaf, 2010; Goei et al., 2013):

- Primary system of support (school wide/universal)

The intervention of the bottom level is applied to everyone and involves school, family and community (Sugai & Horner, 2006). This tier represents 80% of all pupils (Goei et al., 2010/2011; Horner et al., 2005; Sprague & Golly, 2004; Sugai & Horner, 2006);

- Secondary system of support (targeted/selective)

The intervention on the middle level is applied to pupils with limited risk for developing behavioural and learning problems (Goei et al., 2010/2011). This tier represents 15% of all pupils (Goei et al., 2010/2011; Horner et al., 2005; Sugai & Horner, 2006);

- Tertiary system of support (individual/indicated)

The intervention on the top level is applied to a small part of the pupils who experienced serious behavioural and learning problems (Goei et al., 2010/2011). This tier represents approximately 5% of all pupils (Goei et al., 2010/2011; Horner et al., 2005; Sugai & Horner, 2006).

According to Goei et al. (2013) "the interventions across the three tiers all have a relationship with the expected and preferred behaviour, building a predictable and sustainable learning environment" (p. 8).

Every tier of the prevention model is associated with the use of evidence based interventions. By providing targeted interventions for each tier and pay attention to preventive measures that focus on all pupils, efforts are made to prevent problem behaviour (Goei et al., 2010/2011). The bottom tier of the prevention model focuses on all pupils in the school. The intervention could be effective educational support, social skills training, effective classroom management, teaching expectations in terms of behaviour, agreements about active supervision and monitoring, positive reinforcements, clear rules and related actions and decision-making on the basis of data (Goei et al., 2010/2011; Hieneman, Dunlap, & Kindcaid, 2005). These principle can be associated with rules, expectations and procedures and disciplinary interventions, establishing positive relationships and getting off to a good start, research-based elements for effective and positive classroom management (Marzano, Marzano, & Pickering, 2003).

Figure 2.3. PBS Pyramid. Adapted from "Learning PBS skills and competences in a virtual learning environment," by M.A. van Oudheusden, 2012b.
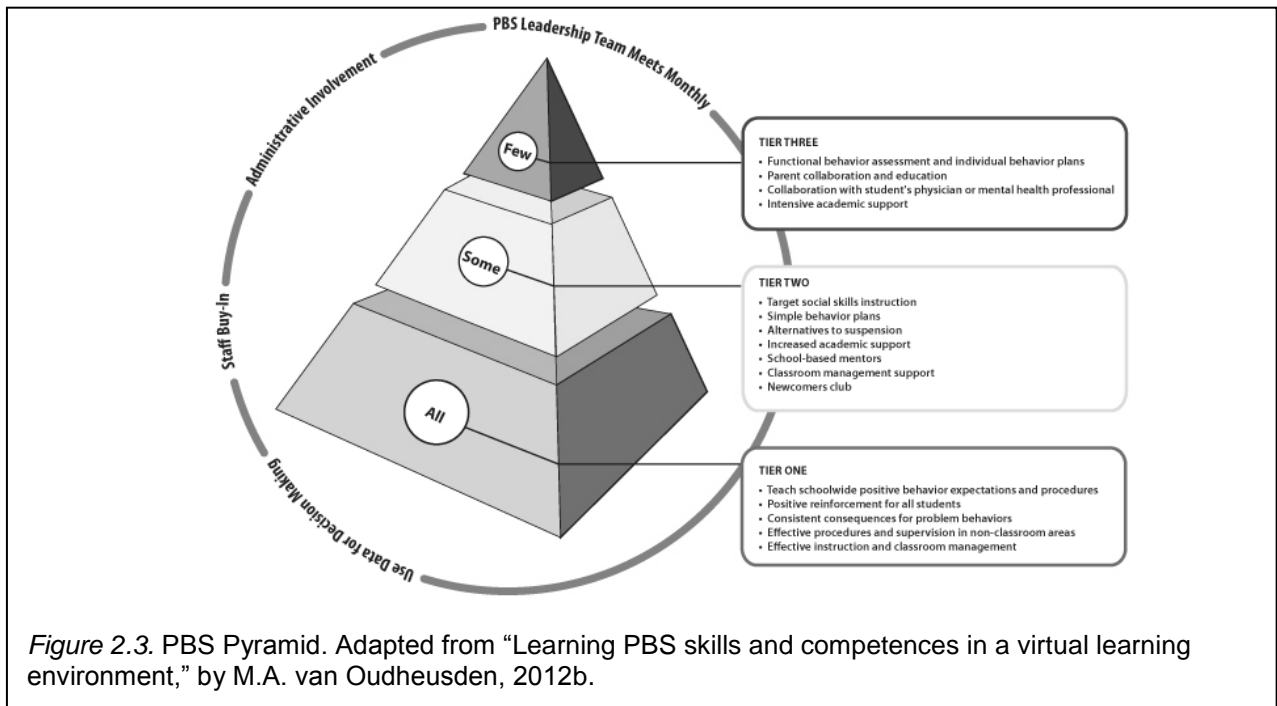
2.2.3 Positive approach, effective rules, teaching behavioural expectations and consequences

PBS is characterized by the presence of positive reinforcements. The strengthening of desired behaviour is a powerful tool to bring about behavioural change. The attention to desired behaviour on a PBS school is four times greater than the attention to correcting undesirable behaviour, so 4:1 (Goei et al., 2010/2011; Sprague & Golly, 2004). To change pupils behaviour, a positive teacher-student relationships is important, because this creates a strong fundament from which behavioural changes can occur (Morgan & Ellis, 2011). This can be linked to teacher-student relationship, a research-based element for effective and positive classroom management (Marzano, Marzano, & Pickering, 2003).

Clear rules and routines are necessary for teaching behavioural expectations and for classroom management (Marzano, Marzano, & Pickering, 2003; Newcomer, 2009; Reinke, Herman, & Stormont, 2013). In this way, these principle guiding the PBS framework can be associated with rules, expectations and procedures a research-based element for effective and positive classroom management (Marzano, Marzano, & Pickering, 2003). Rules are important, because they show expectations and acceptable behaviour (Morgan & Ellis, 2011). When drawing up the rules, the pupils should be involved, because this gives them according to Morgan & Ellis (2011) "ownership and they will be more likely to accept their terms and conditions and therefore comply" (p. 23). Rules should be clear, consistent, comprehensive, enforceable, positive formulated, specific and explainable (Morgan & Ellis, 2011; Sprague & Golly, 2004). Keep the rules short and simple, so the pupils can understand and remember the rules (Morgan & Ellis, 2011; Sprague & Golly, 2004). As mentioned before, the rules and expectations can be best drawn up in the first lesson of the beginning of the school year, this promotes the positive learning environment (Morgan & Ellis, 2011; Sprague & Golly, 2004). This can be linked to getting off to a good start, a research-based element for effective and positive classroom management (Marzano, Marzano, & Pickering, 2003).

According to Sugai and Lewis (1996, as cited in Warren et al., 2006)

> The teaching of behavioural expectations includes at a minimum: (a) didactic instruction on the expectations and how they apply in various settings around the school, (b) a demonstration of appropriate behavior and social skills, and (c) opportunities for students to practice these skills through role-plays and in-vivo situations in different settings within the school with a variety of people (p. 190).

Newcomer (2009) confirms the three steps of Sugai and Lewis (1996, as cited in Warren et al., 2006), but supplement it with discuss why the behavioural expectation is important and what will happen when the pupil followed and when the pupils not followed the expectation. This can be linked to disciplinary interventions, a research-based elements for creating an effective and positive learning environment (Marzano, Marzano, & Pickering, 2003). An important element is the feedback pupils received from the teachers, as well as the demonstration teachers give to pupils and teachers as a role model for the pupils, which refers to the mental set of the teacher, also a research-based element for effective and positive classroom management (Colving, Sugai, & Kameenui, 1994 as cited in Warren et al., 2006; Goei et al., 2010/2011; Marzano, Marzano, & Pickering, 2003). When pupils follow the rules and expectation, stitch energy in that, so pupils shows this behaviour often (Morgan & Ellis, 2011). According to Morgan and Ellis (2011) "do not put energy and time into inappropriate behaviour but instead deal with the situation in a calm manner, away from others, then re-direct her attentions" (p. 34).

Positive consequences are based on reinforcement of appropriate behaviour. Reinforcement is used by teachers, to stimulate pupils appropriate behaviour in the classroom (Newcomer, 2009). According to Newcomer (2009) "reinforcers can be social reinforcers (e.g. praise, recognition), activity reinforcers (e.g. special privileges, jobs, computer time), material reinforcers (e.g. tangible items), and token reinforcers (i.e., items exchanged for other reinforcers)" (p. 9). Reinforcement can be used to decrease unwanted behaviours and increase good behavior (Newcomer, 2009). According to Newcomer (2009) "differential reinforcement procedures are an effective way to reduce problem behaviors by reinforcing the absence of the behavior or targeted alternatives" (p. 10). Increase choice making for pupils could be applied here, pupils could make choices with regard to their reinforcer. Teachers and pupils can create a list of reinforcers, from which the pupil chooses one final reinforcer. This stimulates an increase pupils inclusion, productivity and independence (Ruef et al., 1998).In this way pupils are also responsible for creating a positive and effective learning environment in the classroom and this promote the relationship between the teacher and the pupil. One important note is that the system of reinforcement should be aligned with the principles that apply to the whole school (Sprague & Golly, 2004).This can be linked to disciplinary interventions, students responsibility for management and teacher student relationship, three research-based elements for effective and positive classroom management (Marzano, Marzano, & Pickering, 2003). Also the consequences should be clearly stated, known to everybody and emphasize pedagogical aims (Horner et al., 2005). It the teacher applies clear rules, routines and strengthening positive behaviour, corrections may be effectively (Morgan & Ellis, 2011). According to Morgan & Ellis (2011) "correctives need to be timely, specific, logical, reasonable and fair, with a clear beginning and ending" (p. 28). This can be linked to

mental set, a research-based elements for effective and positive classroom management (Marzano, Marzano, & Pickering, 2003).

According to Horner et al. (2005) is it important to create a predictable environment that is focused on the success of the pupils. Classrooms with increasing predictability can develop and modify routines to reduce anxieties and challenging behaviour of pupils (Ruef et al.,1998). This can be done by creating a daily schedule, make pupils aware of changes in the planning and make pupils aware of transitions from one to another lesson (Ruef et al., 1998). Disruptive behaviour decreases when pupils know what to do and when pupils have to do it (Ruef et al., 1998).

2.2.4 Decision-making on the basis of data

An essential part of PBS is decision-making on the basis of data (Warren et al., 2006). For interventions in the three tiers it is important to analyse the situation in which the problem behaviour occurs, to devise a plan and perform an intervention (Goei et al., 2010/2011). In order to analyse the situation in which the problem behaviour occurs is it essential to collect the following information (a) circumstances (when, what, where, with whom) associated with behaviour incidents, including both immediate (antecedents) and more distal (setting event) variables; and (b) outcomes of behaviour (i.e., what student(s) get or avoid through their behaviour, including both planned and incidental consequences) (Hieneman, Dunlap, & Kincaid, 2005, p. 782).
To obtain the information mentioned earlier, existing data can be used, such as disciplinary, incident and academic reports (Hieneman, Dunlap, & Kincaid, 2005). It is also important to obtain new data to clarify events associated with the behaviour of the pupils, on the basis of interviewing teachers, parents and chain partners or observations and conducting observations (Hieneman, Dunlap, & Kincaid, 2005). Collected data is the basis to judge the effectiveness of the intervention and make further decisions for the intervention (Goei et al., 2010/2011; Warren et al., 2006). To respond to this, teachers can change the learning environment, by removing environmental factors that stimulate challenging behaviour (Ruef et al., 1998).

Schools in the United States use School Wide Information System (SWIS). In SWIS data is collected from pupils, teachers and the school and can help the teacher to monitor when and where the behaviour occurs most frequently (Goei et al., 2010/2011; Safran & Oswald, 2003).

2.2.5 Collaboration with parents and chain partners

In PBS all stakeholders are involved in the process, because pupils have not to deal with teachers only, but also with parents, administrators and chain partners (Goei et al., 2010/2011; Hieneman, Dunlap, & Kindcaid, 2005). A PBS team consists also of pupils, teachers, parents and other chain partners (Hieneman, Dunlap, & Kincaid, 2005). According to Hieneman, Dunlap and Kincaid (2005) the PBS team "should be knowledgeable of the student(s) and the circumstances surrounding the behavior, and be familiar with and have access to or control over services, personnel, and resources" (p. 781/782). Parental involvement has a positive effect on pupils behaviour and pupils provide better academic performance (Epstein, 2001; Fan & Chen, 2001; Henderson & Mapp, 2002 as cited in Goei et al., 2013).

2.2.6 The benefits of positive behaviour support

Various studies showed several benefits of PBS, for both pupils and teachers. The benefits for pupils are reduction in problem behaviour show by significantly less office discipline referrals, less suspensions, less expulsions and improved effectiveness for intensive interventions (Bradshaw et al., 2009; Cohen, McCabe, Michelli, & Pickeral, 2009; Goei et al., 2010/2011; Horner et al., 2005; Luiselli, Putnam, Handler, & Feinberg, 2005; Newcomer, 2009; Reinke, Herman, & Stormont, 2013). Secondly, PBS can result in an increase in pupil engagement, improving of risk and protective factors and pupils experiences school as a safer and more supportive environment (Horner et al., 2005; Horner et al., 2009). And PBS can improve the academic performance of the pupils and improved family involvement. (Horner et al., 2005; Horner et al., 2009; Luiselli et al., 2005).

The benefits for teachers are better collaboration between teachers and in support of individual pupils. PBS provides also improved classroom management, through routines in the classroom, strategies for prevention of problem behaviour and to put the emphasis on what is going well (Horner et al., 2005; Warren, et al., 2006). Schools that implemented PBS showed a higher level of teacher self-efficacy (Kelm & McIntosh, 2012). The points mentioned above will ensure that teachers see themselves as more effective, which creates improving performance, improving perceptions, increases the effective learning time and contribute to better learning (Goei et al., 2010/2011; Horner et al., 2005; Luiselli et al., 2005). PBS also reduces absenteeism and increased retention (Horner et al., 2005). Thus, PBS could provide a framework for teachers to create an effective learning environment.

Research from Romano (2007) shows that novice teachers have different needs to help them with the problems they experience in their teaching practice, one need is for more training in classroom management. With the rise and growing appreciation of games and simulation-based learning, education can therefore use simulation of digital games to prepare student teachers for the profession (Christensen et al.,, 2011). An opportunity is a simulation in which student teachers can learn through their presence and awareness (Dass, Dabbagh, & Clark, 2011).

2.3 Simulation

The major element of a simulation is that it resemble real life situations, where student teachers can practice problem solving and gain insight into effective behaviour (Devlin-Scheurer & Sardone, 2010; de Jong, Lane, & Sharp, 2012). Using a simulation gives student teachers the opportunity to practice, evaluate the results, learn from their mistakes, try again, enhancing their skills and increasing the self-confidence (Panettieri, 2006 as cited in Devlin-Scherer & Sardone, 2010; Dieker et al., 2014; Cruickshank, 1969 as cited in de Jong, Lane, & Sharp, 2012). Student teachers develop responsibility for their self-reflection to improve their practices (Dieker et al., 2014). In the simulation student teachers must receive a sense of real presence, according to Dede (2009, as cited in Dieker et al., 2014) "this phenomenon of "presence" is the key to an effective simulator" (p. 22). It is also important to bring some fun into the game simulation for student teachers, so that they will be motivated to work in the simulation and learn in the simulation (Bush et al., 2012). According to Prensky (2000) as noted in (Bush et al., 2012) "fun training programs are more effective, especially for younger generations of

students who were raised on digital games and entertainment" (p. 1756). Student teachers in a simulation take defined roles and communication takes place between participants or elements in the simulation (Brown, 1999). Student teachers can work together or work alone in a simulation (Panettieri, 2006 as cited in Devlin-Scherer & Sardone, 2010). A simulation is a controlled environment for education and entertainment purposes (Bush et al., 2012; de Jong, Lane, & Sharp, 2012).

2.3.1 Types of simulations

Simulations can be classified into two types of simulations: (1) experiential simulations, and (2) symbolic simulations (Vanlehn, Ohlssen, & Nason, 1994 as cited in Gredler, 2004; Brown, 1999; Gredler, 2004). Experiential simulations are social microcosms (Gredler, 2004). Participant should view themselves as part of a real-world scenario, in which they should react on situations and experience feelings and the questions and concerns related to their role in the simulation (Brown, 1999; Gredler, 2004). Examples of experiential simulations are pilot and astronaut simulations (Gredler, 2004). Experiential simulations can be divided in three types: (1) social process, (2) diagnostic and, (3) data management (Gredler, 2004). According to Gredler (2004) social process experiantal simulations refer to the idea that "contingencies for different actions are imbedded in the scenario and role descriptions (a group exercise)" (p. 574). An example of social process simulations is that survivors of a crash receive role cards, these information is important to survive. In order to find food, water and stay alive it is important to communicate clearly and listen well (Jones, 1982 as cited in Gredler, 2004). In diagnostic simulations people have to deal with various types of decision-making. An example is the simulation in diagnostic or patient management (Gredler, 2004). Data management simulations deal with the relationship between quantitative variables, which can be used at business or financial institutions (Gredler, 2004). Symbolic simulations are more an abstracted view (Brown, 1999). According to Gredler (2004) "a population of events or set of processes external to the learner; individuals interact with the information in the role of researcher or investigator" (p. 575). An example of a symbolic simulation is according to Sauer, Wastell and Hockey (2000, as cited in Gredler, 2004):

> the Cabin Air Management System (CAMS), a generic simulation of the automated life support system in a spacecraft. Developed to research the multiple effects of factors that influence human performance in complex systems, scenarios implemented with CAMS have investigated human adaptive strategies in the management of varying task demands (p. 577).

Symbolic simulations can be divided in two types, (1) laboratory-research simulations and (2) system simulations (Gredler, 2004). In laboratory-research simulation participants function as researchers and make predictions or solve problems by investigating complex and evolving problems (Gredler, 2004). System simulations refers to the participants as problem solvers in analysing, diagnosing and in correcting operational errors in the system (Gredler, 2004). Relevant subject-area knowledge and particular research skills are major skills needed for symbolic simulations (Gredler, 2004).

2.3.2 Components in simulations in teacher education

According to Dieker et al. (2014) "three critical components must be purposefully planned for and realized in strong simulated environments: (a) personalized learning, (b) suspension of disbelief, and (c) cyclical procedures to ensure impact" (p. 22).

The first component is personalized learning. The individual development is important in learning the skills student teachers needed for their own success and for the students success in the class (Dieker et al., 2014). According to Brand (1998, as cited in Dieker et al., 2014):

> cautioned against a "one size fits all" instructional model noting that the approach is not effective in changing teacher behaviour. He suggests that "teachers should identify their current interests and that training should be geared to a teacher's needs and goals using diversified instructional strategies (p. 22).

The second component is suspension of disbelief. According to Kantor, Waddington, and Osgood (2000, as cited in Dieker et al., 2014) "that if suspension of disbelief does not occur, then the system will fail. This same lesson is important to the field of teacher education as we embark on using the power of simulated environments" (p. 23).

The third component is cyclical procedures to ensure impact. The ARC is an Action Review Cycle (Dieker et al., 2014). According to Dieker et al. (2014):

> in an ARC, teachers reflect before and after the session using these three stages: (a) Before Action Review (BAR) – plan for what you hope to learn from the simulator, (b) Action – experience the simulation, and (c) AAR – teacher examines the gap between intended and actual results (p. 23).

The ARC allows for more personalized learning (Dieker et al., 2014).

When all these three components are intertwined in a simulation, this will improve the content knowledge and pedagogical knowledge of the student teachers, but also adaption to the needs of the individual student teachers (Dieker et al., 2014).

2.3.3 Simulations in teacher education

From 1960-1979 simulations were used in the form of films and videos to make teachers aware of the class environment and the multicultural issues (Cuickshank, 1988 as cited in Brown, 1999). During this period, simulations such as role play activities and board games were already. This way, student teachers could practice, make decisions, analyse and understand their emotional responses and could work in a different way with the content (Devlin-Scherer & Sardone, 2010; Cruickshank, 1969 as cited in de Jong et al., 2012). Between 1980 to 1988 the simulations were developed for microcomputers and in the 90s the microcomputers were developed into desktop computers (Brown, 1999). Over the last decades simulations have become quite popular for creating a digital environment that simulates reality (Ferry et al., 2004). Simulations are commonly used in aviation, medicine, military and business and management training, but are quite uncommon in teacher education institutes. Litte research is done on the use of simulations in teacher education institutes (de Jong et al., 2012; Hixon & So, 2009; Judge et al., 2013; Sawchuk, 2011 as cited in Bush et al., 2012). Research on simulations and development of simulations for teacher education is just emerging (Christensen et al., 2011; Dieker et

al., 2014). Therefore limited literature is available about simulation and training in the field of teacher education (Clarke, 2013 as cited in Dieker et al., 2014). Dieker et al. (2014) mention in their research that based on what they discovered that "as the technology of the digital puppetry-based virtual environments evolves each year, the expected outcome is even greater teacher learning gains" (p. 29). An example of a simulation used in teacher training is simSchool, which trains student teachers for the profession (Bush et al., 2012). According to Zibit & Gibson (2005) "simSchool is being developed to fill the need in teacher education for more practice time, quicker and more relevant feedback, and a reliable experiment platform for trying out new teaching methods and strategies" (p. 2). SimSchool provides training opportunities for student teachers, just like a flight simulator for pilots in training (Zibit & Gibson, 2005). SimSchool incorporates all three components of a strong simulation: (a) personalized learning, (b) suspension of disbelief, and (c) cyclical procedures to ensure impact (Dieker et al., 2014).

2.3.4 SimSchool

SimSchool is an experiential simulation that can be characterized as a "social process" and "diagnostic" type of simulation. It is aimed at preparing student teachers for the real classroom practice. The simulation simSchool is designed to practice teaching skills in a virtual classroom (Zibit & Gibson, 2005). According to Christensen et al. (2011) the goal of simSchool is "to provide learning and training opportunities that can transfer to the real classroom and if possible, improve teacher preparation" (p. 203). Student teachers who use simSchool can gain experiences in lesson planning, instructional strategies, classroom management techniques, special education, adjusting teaching to multiple cognitive skills and practice building relationships with simStudents, leading to increased learning (Gibson, 2007; Hopper, Knezek, & Christensen, 2013). The term simStudent refers to a database profile of a pupil in the simulation (Gibson, 2007). In the simulation simSchool, student teachers serve as teachers and are responsible for the learning of all the simStudents in the virtual classroom (Bush et al., 2012; Hettler, Gibson, Christensen, & Zibit, 2008; Zibit & Gibson, 2005).

Each simStudent has his own personality profile in the field of one academic-cognitive dimension, five psychological dimensions and three physical-perceptual dimensions (Christensen et al., 2011; Hettler et al., 2008). The academic-cognitive dimension consists of expected academic performance, according to Hettler et al. (2008) "simSchool uses a changing number of academic dimensions to represent content knowledge and cognitive processes highly associated with specific subject areas" (p. 26). The psychological dimension in simSchool is based on the personality profile Five Factor model (OCEAN) of McCrae and Costa (1996), openness to learning, conscientiousness toward tasks, extroversion to introversion, agreeableness and neuroticism – emotional stability (Hettler et al., 2008). These five dimensions can be either positive or negative and ranges between -1 and +1, where 1 is the norm. Therefore there are a lot of different personalities for simStudents (Christensen et al., 2011; Zibit & Gibson, 2005). The last dimension, the physical-perceptual dimension consist of visual, auditory and kinaesthetic and are based on the "theory of multiple intelligences" (Hettler et al., 2008). These dimensions determine how a simStudent learn, behaves and perform in the classroom (Christensen et al., 2011; Zibit & Gibson, 2005).

Before the student teachers enter the virtual classroom, they can see the profile of the simStudent (Hettler et al., 2008; Zibit & Gibson, 2005). In the classroom they can choose between assigning a new task or addressing all simStudents or an individual simStudent (Bush et al., 2012; Christensen, et al., 2011; Hettler et al., 2008; Hopper, Knezek, & Christensen, 2013; Zibit & Gibson, 2005). The verbal content of the simulation is divided into sixteen categories of the interpersonal circumplex. These sixteen categories are divided into four groups (see Figure 2.4): (1) being assertive or taking power in a friendly way, (2) friendliness while increasingly giving power, (3) giving power while growing cooler and distant, and (4) cool distance while increasingly taking power (Hettler et al., 2008). The simStudents change their body positions and respond in reaction to the actions of the student teachers (Bush et al., 2012; Hettler et al., 2008; Zibit & Gibson, 2005). According to Christensen et al. (2011) "each simulated student respond differently to every input, based on their current but malleable psychological and cognitive profile and how that relates to the constant settings of the task environment" (p. 206). During the simulation, student teachers receive feedback through charts and gauges in order to experience the consequences of their decisions. At the end of the simulation, the student teachers receive feedback through graphs on the effectiveness of their teaching (Bush et al., 2012).

Figure 2.4. The Circumplex-Comments in simSchool. Adapted from "simMentoring: Guiding Development from Virtual to Real Teaching!" by L. Hettler, D. Gibson, R. Christensen and M. Zibit, 2008, *University of North Texas and CurveShift*
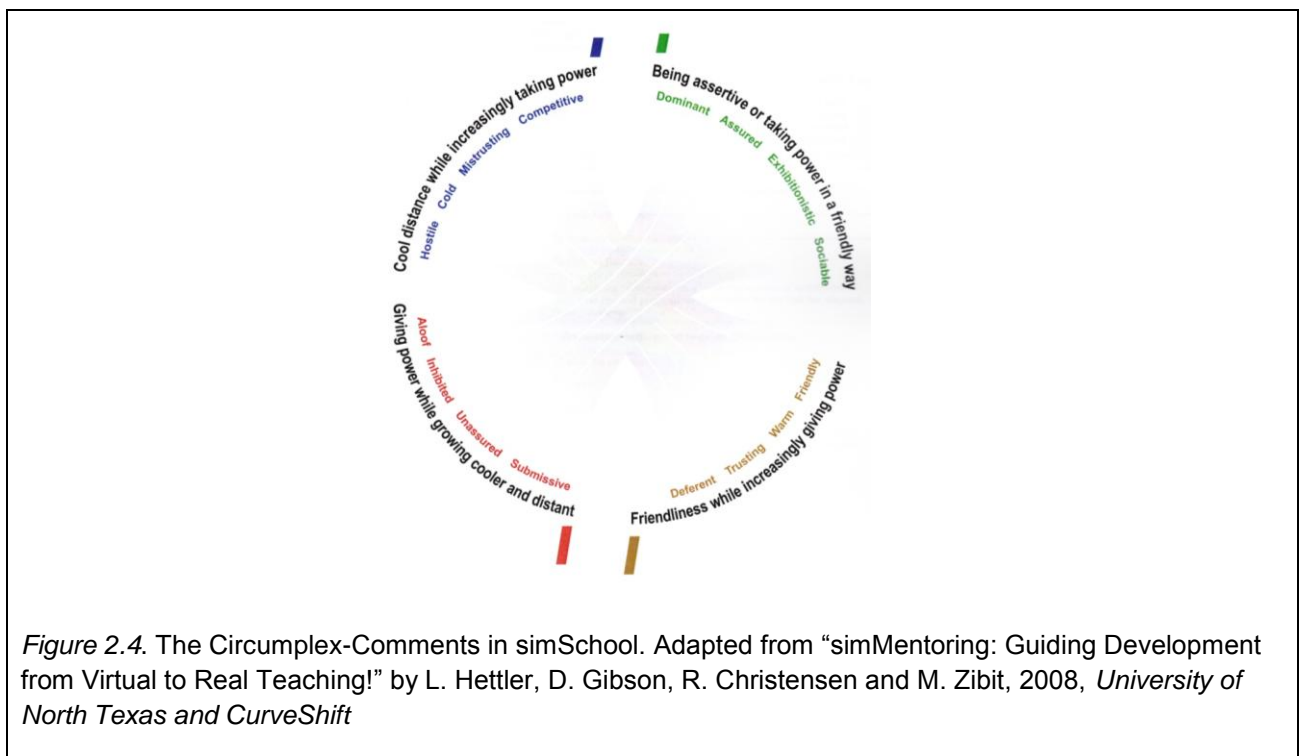
Student teachers indicate that simSchool is beneficial to the teacher education programme (Bush et al., 2012). Student teachers can practice in the simulation simSchool with a larger variety of pupil profiles than during their internship in the classroom, therefore student teachers get better learning experiences (McPherson, Tyler-Wood, McEnturff, & Peak, 2011). Other positive aspects of simSchool are the emphasis on the individual pupil and the safe learning environment of simSchool (Bush et al.,

2012) One student teacher noted in the research of Bush et al. (2012) that simSchool demonstrates that positive reinforcement is more effective than negative reinforcement. SimSchool results in better teaching skills and instructional self-efficacy when it is focused on learning to adjust to problem behaviour (Christensen et al., 2011). This shows that simSchool can be useful to train student teachers for the profession (Christensen et al., 2011).

Suggestions to improve simSchool are resolving technical issues and the mechanics of the software, such as seeing the performance reports of every simStudent during the simulation (Bush et al., 2012). According to Bush et al. (2012) "as technology continues to mature and improve, simulators like simSchool will likely become an integral part of pre-service and in-service teacher education programs in the future" (p. 1759).

2.3.5 Advantages and disadvantages of a simulation in teacher education

A simulation should not replace the practical experience of the student teachers and the methods of the teacher training institute. It should be a complementary learning method to prepare them for the profession (Brown, 1999; Christensen et al., 2011). Student teachers who use a simulation faster gain confidence in their capabilities in comparison with the traditional preparation programme of the teacher training institute. It also makes student teachers see the link between theory and practice (Christensen et al., 2011; Cruickshank, 1969 as cited in de Jong et al., 2012; van Oudheusden, 2012a). By using a simulation, student teachers gain insight into the issues and challenges that teachers have to face in their profession (Ferry, Kervin, Cambourne, Turbill, Hedberg, & Jonassen, 2005). The study of Hopper, Knezek and Christensen (2013) and Ferry et al. (2004) show that a simulated learning environment prepares student teachers better for the profession and the requirement of the classrooms. Student teachers make the connection between what happened in the simulation and in the actual classroom (Ferry et al., 2004). They transfer theory into practice. According to Ferry et al. (2005) "users consistently reported that their experience with the simulation helped them to make their practicum experience more focused by giving them knowledge and experience to more fully appreciate the impact of subtle changes that experienced teachers made during lessons" (p. 30). This is confirmed by a student teacher in the study of Ferry et al. (2005), who gained experience in a simulation "I think it was the closest thing to actually being in a classroom that I have experienced at university. It gave me something that was really tangible" (p. 28). An important condition for success is that student teachers feel engaged in the simulation (Brown, 1999). A simulation for student teachers is a positive and safe environment in which student teachers can experiment before they enter the profession (Brown, 1999; Bush et al., 2012; Dass, Dabbagh, & Clark, 2011; Hopper, Knezek, & Christensen, 2013; McPherson et al., 2011). The student teachers felt that the simulation permitted them to try different techniques without fear of hurting real pupils, so they can analyse pupil behaviour (Brown, 1999; Bush et al., 2012; Christensen et al., 2011; Dass, Dabbagh, & Clark, 2011; Ferry et al., 2004; Ferry et al., 2005; van Oudheusden, 2012a). When the student teachers makes mistakes in the real classroom, this can lead to misunderstanding between the student teacher and the pupil in the classroom. Of course this depends on the seriousness of the mistake (Dieker et al., 2014). These dilemmas and issues can be practiced in the simulation, without any consequences (Dieker et al.,

2014) According to Dieker et al. (2014) "this "virtual rehearsel" has the potential to improve practice, in the simulator and the classroom" (p. 24).Student teachers directly see the consequences of the decisions they make (Brown, 1999; Ferry et al., 2004). It gives direct feedback on their actions. Other student teachers or an online mentor can give feedback how they perceive the effect of the decision (Brown, 1999; Ferry et al., 2004). Student teachers can also manipulate time and space, the simulation can be paused, accelerated, repeated, student teachers can explore alternative decisions and gain new insights (Dass, Dabbagh, & Clark, 2011; Ferry et al., 2004; Ferry et al., 2005; McPherson et al., 2011). This gives student teachers a better insight into the complex situation of the classroom (Ferry et al., 2005). This allows according to Ferry et al. (2005) student teachers "think critically about complex teaching situations which relied on the teacher's ability to tune into children's experiences, engage with them in dialogue and negotiation as well as utilise a range of indirect instructions such as questioning, modelling and prompting" (p. 22). A student teacher in the study of Ferry et al. (2005) stated she "…liked how you can go through and check your answers. You can go through and if you don't like the consequences of your decisions you can go back and change it" (p. 30). This enables student teachers to reflect more deeply about their decisions. They can also reflect and share experiences in dialogue with other student teachers (Ferry et al., 2005; van Oudheusden, 2012a). In this way, student teachers can practice and develop teaching and classroom management techniques through replication and correcting (Judge et al., 2013). In Judge et al. (2013) a student teacher said "made me more aware of the options that I have when dealing with student disruptions," and "shows me if I am doing a strategy correctly because negative student behaviors would diminish" (p. 95). Student teachers can learn through presence and awareness (Dass, Dabbagh, & Clark, 2011). Simulations provide the ability to support collaboration, communication and create capabilities (Dass, Dabbagh, & Clark, 2011). According to Löfström and Nevgi (2007):

> collaborative learning and dialogue can be supported by offering synchronous and asynchronous discussion platforms and shared file management spaces. Dialogue provides not only information about students' learning but is also an important means by which teachers can gain instant feedback about how students learn (p. 315).

The knowledge of the personal beliefs of student teachers increase and this can affect the development of their teaching style (Ferry et al., 2004). In the simulation student teachers have more control and therefore minimize the negative effect of actions (Brown, 1999). A final advantage, a simulation makes it possible to reduce the complexity of the PBS process into small pieces, so the student teachers can progressively master more complex skills (Sawchuk, 2011 as cited in van Oudheusden, 2012b).

    The use of a simulation can also have several limitations. The first limitation is the lack of interaction with teachers and pupils, because student teachers cannot really interact with the pupils in the class (Hixon & So, 2009). The second limitation is the limited reality and complexity (Hixon & So, 2009). Student teachers see limited value of the simulation, because they already have had experiences in the real classroom. They see the simulation as not real enough (Brown, 1999). The third limitation is the availability of relevant cases (Hixon & So, 2009). The fourth limitation are technical problems. This can negatively affect the image of a simulation and can impede the teaching

experience (Bush et al., 2012; Hixon & So, 2009). A student teachers in the study of Bush et al., (2012) stated that simSchool "still has lots of glitches, but I think the idea of giving potential teachers opportunities to try strategies for behavior management in the classroom is a great idea" (p. 1758). Some limitations encompass the broader concept of a virtual learning environment. Some student teachers experience isolation, loneliness. Lack of necessary ICT skills for working in a virtual learning environment can be another factor. Another limitation is that student teachers do not know the code of conduct when they enter a virtual learning environment for the first time (Löfstrom and Nevgi, 2007). According to Löfstrom and Nevgi (2007) "a learner who is entering a virtual environment, particularly for the first time, must first form a cognitive map of the environment and then grope towards a suitable practice (creating a script)" (p. 314). Learning in a virtual learning environment is not suitable for all student teachers, according to Löfström & Nevgi (2007) "studying in a web-based environment may presuppose a significant degree of student independence and tolerance for ambiguity and stress" (p. 314). The last limitation can be a lack of time and fear of change (Mishra & Koehler, 2006). All ofthese factors can be obstacles for learning (Löfstrom and Nevgi, 2007).

Analysis of user interaction with the simulation highlights three key implications for the use of simulations in student teacher education: (1) identifying potential classroom problems, (2) new perspectives and reflecting on preconceived ideas and, (3) development of opinions and new ways of thinking (Ferry et al., 2005). According to Mahon et al. (2010) some suggestions are:

> thinking of the range of options open to the teacher such as the use of the teachers physical space, for example, pulling a student aside or outside to talk. Another student student said, 'Pricimity! Walk up to students!' Others made a note of the difference in addressing the whole class versus the instigator, and one student teachers commented that when the simavatar were behaving appropriately they should be rewarded (p. 130).

2.3.6 The concept and characteristics of a simulation in teacher education

In this study the focus is on eight characteristics, these points are compiled after section 2.4 simulation. The focus is on eight characteristics, because the main question is related to characteristics of a simulation. The following characteristics are according to simulation: (1) personalized, (2) motivating, (3) resembling reality, (4) complexity of reality, (5) cooperation, (6) reflection, (7) levels, and (8) blended learning. Below, all these points shown why they are important and are supported by the literature of section 2.4. The first criterion is personalization, because the individual development of a student teacher plays a key role in their own success and for the success of the pupils in the classroom. So the simulation should be personalized (Dieker et al., 2014). The second criterion is motivation, because it is important that the simulation brings fun, for student teachers to learn (Bush, et al., 2012; Prensky, 2002, as cited in Bush et al., 2012). The third and the fourth criteria are also important, because the simulation should resemble reality. This is the major element of a simulation (Devlin-Scheurer & Sardone, 2010; de Jong, Lane, & Sharp, 2012). The simulation will fail if the suspension of disbelief will not occur (Kantor, Waddington, and Osgood, 2000, as cited in Dieker et al., 2014). This is about the user's beliefs that he or she seems to be, both

physically and cognitively in the environment, which increases the level of involvement (Dede, 2009 as cited in Dieker et al., 2011). Cooperation, the fifth criterion is also an crucial point, because student teachers can experience some loneliness. With opportunities to cooperate built into or alongside the simulation, student teachers can work together (Löfström & Nevgi, 2007). In addition, the focus is also on reflection, the sixth criterion, because student teachers can practice, see results, learn from their mistakes and can try again and this increases their skills and their self-confidence. Criterion eight, having several levels built into the simulation, is also an important point, because student teachers can practice in more different levels of complexity with a variety of pupils and contexts than during their internship (McPherson et al., 2011). The last criterion is blended learning, the simulation should not replace the practice, but should be complementary (Brown, 1999; Christensen et al., 2011).

2.4 Summary

Section 2.2, 2.3 and 2.4 form the basic concept for this study. In section 2.2 the six research-based elements of Marzano (2003) are described, including (1) rules, expectations and procedures, (2) disciplinary interventions, (3) teacher-student relationship, (4) mental set, (5) student's responsibility for management and (6) getting off to a good start. A handhold for learning this six research-based elements is the framework PBS, which included (1) working school wide, (2) prevention, (3) positive approach, teaching behavioural expectations and consequences, (4) decision-making on the basis of data and (5) collaboration with parents and chain partners. As mentioned above at the end of section 2.3, teachers who are new to the profession often have problems with classroom management and classroom discipline (Kent, 2000; Romano, 2007; Veenman, 1984). Through the growth of games and simulation-based learning, teacher training institutes can use simulation to prepare the student teachers for the profession (Christensen et al., 2011). At the end of this section, eight points are marked, which are important characteristics for a simulation, (1) personalized, (2) motivating, (3) resembling reality, (4) complexity of reality, (5) cooperation, (6) reflection, (7) levels, and (8) blended learning. So, all the three concepts are related to each other, PBS can be seen as a framework to develop the six research-based elements and a simulation can help student teachers to practice problem solving and skills in the six research-based elements.

2.5 Theoretical framework and its application to the current study

Figure 2.5 shows the operationalization of all the three concepts, the six research-based elements of Marzano, Marzano and Pickering (2003), the five points of PBS and the eight points of the simulation.
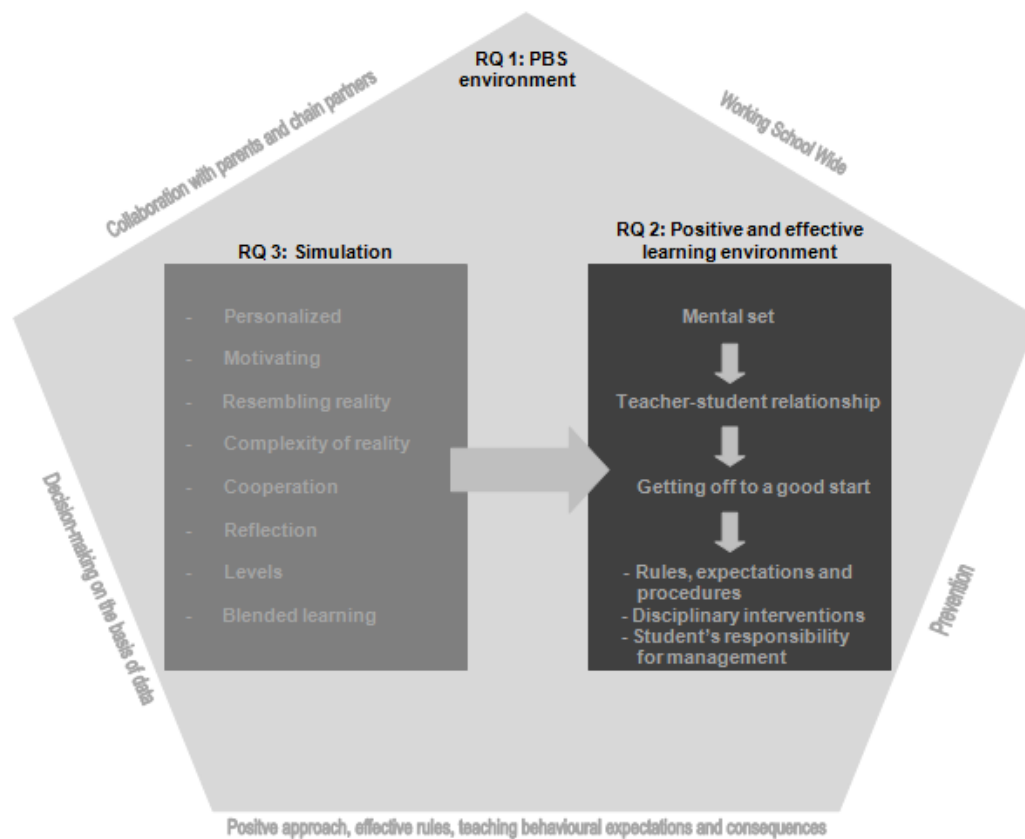
Figure 2.5: Research-based element surrounded by PBS, which is entered in a simulation.

The simulation and the six research based elements of Marzano, Marzano and Pickering (2003) are displayed in the pentagon and are surrounded by the five elements of PBS, because PBS is a framework for creating a positive and effective learning environment in the classroom and this can be inserted in a simulation. The five elements of PBS, (1) working school wide, (2) prevention, (3) positive approach, effective rules, teaching behavioural expectations and consequences, (4) decision-making on the basis of data, and (5) collaboration with parents and chain partners, are displayed at each corner of the pentagon. The PBS concept is studied in this study, but in a limited way. From the literature eight points are mentioned for a simulation: (1) personalized, (2) motivating, (3) resembling reality, (4) complexity of reality, (5) cooperation, (6) reflection, (7) levels, and (8) blended learning. These points are also mentioned in the figure, because these points are important characteristics for a simulation. The concept simulation is studied during this study, by observing and questioning the experiences of student teachers into the simulation simSchool. The student teachers described advantages and disadvantages and gave suggestion about a new simulation, because the simulation should meet certain characteristics and there should be looked at the experience of the student teachers in a simulation, which should be examined in this study. The student teachers have to learn something in the simulation and that are the six research based elements of Marzano, Marzano and Pickering (2003), surrounded by the framework of PBS. The six research based elements of Marzano, Marzano and Pickering (2003) are categorised in four categories, the mental set of the student

teacher, the teacher student relationship, getting off to a good start and the other three research-based elements of Marzano, Marzano and Pickering (2003), (1) rules, expectations and procedures, (2) disciplinary interventions, and (3) student's responsibility for management. In this study the problems and needs of student teachers is examined according to the student teachers themselves and the university teachers, when looking at the six research based elements. This concept is studied separately, but in a limited way, due to the limited size of the study. This study results in content and pedagogical characteristics of a simulation that aims to create an effective and positive learning environment, where student teachers can acquire the necessary competences.

2.6 Research questions

The conceptual framework showed that much research is done on the 3 separate concepts, the six research-based elements of Marzano, Marzano and Pickering (2003), PBS and simulation. Limited research is done about the use of a simulation in student teacher education (Hixon & So, 2009). There is not research available on the application of PBS principles for creating a simulation. Therefore it is important to do research about the use of the framework PBS for creating an effective and positive learning environment in a simulation that helps student teachers. The aim is to reduce the gap between the teacher training and practice. This gap is also mentioned in the problem statement of this study. Windesheim University raises the question whether a simulation can contribute to fill this gap. Therefore, a research question is formulated on the basis of the practice and theoretical understanding. All 3 sub questions are related to the three different concepts, see Figure 2.5. Through answering the 3 sub questions, the main research question can be answered by taking theses sub questions together. In this way the three separate research areas (PBS, research based principles of what works in classroom management and simulation) come together in an integrated way in this study.

Research question
What are the content and pedagogical characteristics of a simulation that contribute to the acquisition of the necessary competences for student teachers to create an effective and positive learning environment in the classroom?

Sub question 1
Which competences are taught during teacher training and are related to positive behaviour support?
Sub question 2
What are the problems and needs of student teachers in creating an effective and positive learning environment in the classroom?
Sub question 3
What are the experiences of student teachers in a simulation?

3. Method

This chapter describes the method of this study. Section 3.1 describes the research design, the analysis phases of educational design research of McKenney and Reeves (2012). After which the participants are described in section 3.2. Section 3.3 describes the instrumentation of this study. This is followed by describing the procedures in section 3.4. Finally section 3.5 describes the data analysis.

3.1 Research design

In this study the Educational Design Research model was adopted (McKenney & Reeves, 2012). According to McKenney and Reeves (2012) this can be defined "as a genre of research in which the iterative development of solutions to practical and complex problems also provides the context for empirical investigation, which yields theoretical understanding that can inform the work of others" (p. 7). In this study the analyse phase of Educational Design Research (McKenney & Reeves, 2012) was applied, because this is a exploratory and preliminary study. The analysis phase includes three consecutive activities, but sometimes the activities take place simultaneously, (1) initial orientation, (2) literature review, and (3) field-based investigation (McKenney & Reeves, 2012). The initial orientation is about the description of the problem statement (McKenney & Reeves, 2012). During this study the initial orientation was done during the writing of the research proposal. The second activity, literature review, is about exploring the problem statement by using literature and this can be used for the design of the instruments for data collection (McKenney & Reeves, 2012). This literature review in this study was displayed in chapter theoretical framework. The last activity field-based investigation, consisted of different methods that were used during this study, namely document analysis, focus group , questionnaire and observation (McKenney & Reeves, 2012).

3.2 Respondents

The participants in this study were student teachers and university teachers of the teacher training institute of Windesheim University of Applied Sciences in Zwolle, the Netherlands. Multiple respondent types (in this case, student teachers and university teachers) were included, because according to McKenney and Reeves (2012) "this helps (a) ensure a balanced portrayal of the situation; (b) achieve respondent triangulation; and (c) create broader ownership of the project" (p. 97). Table 3.1 gives an overview of all respondents during this study, per sub question. After table 3.1, the selection of the participant is explained in more detail.

Table 3.1

Respondents

	Gender	Function	Experiences
Sub question 1			
Which competences are taught during teacher training and are related to positive behaviour support?			
Respondent A	Male	University teacher	13 years working experience at Windesheim University
Respondent B	Female	University teacher	Seven years working experience at Windesheim University
Sub question 2			
What are the problems and needs of student teachers in creating an effective and positive learning environment?			
Respondent A	Male	University teacher	13 years working at Windesheim University
Respondent B	Female	University teacher	Seven years working at Windesheim University
Respondent C	Male	Student teacher	Third year student at Windesheim University
Respondent D	Male	Student teacher	Third year student at Windesheim University
Respondent E	Female	Student teacher	Fourth year student at Windesheim University
Sub question 3			
What are the experiences of student teachers in a simulation?			
Respondent F	Male	Student teacher	Third year student at Windesheim University
Respondent G	Male	Student teacher	Third year student at Windesheim University
Respondent H	Male	Student teacher	Third year student at Windesheim University
Respondent I	Male	Student teacher	Third year student at Windesheim University
Respondent J	Male	Student teacher	Third year student at Windesheim University
Respondent K	Male	Student teacher	Third year student at Windesheim University
Respondent L	Male	Student teacher	Third year student at Windesheim University
Respondent M	Female	Student teacher	Third year student at Windesheim University
Respondent N	Female	Student teacher	Third year student at Windesheim University
Respondent O	Male	Student teacher	Third year student at Windesheim University
Respondent P	Female	Student teacher	Third year student at Windesheim University

3.2.1 Respondents for sub question: Which competences are taught during teacher training and are related to positive behaviour support?

Two university teachers answered this sub question. The responses of these two respondents were used, after the document analysis was conducted, in order to gain a clearer picture of the competences that were related to PBS. In the section below the selection method for these university teachers will be described.

3.2.2 Respondents for sub question: What are the problems and needs of student teachers in creating an effective and positive learning environment?

Two groups of respondents were involved, three student teachers and two university teachers. One student teacher participated in a personal interview, because this student teacher was unable to attend the focus group session. The student teachers were selected by homogeneous sampling (Onwuegbuzie & Leech, 2007). According to Onwuegbuzie and Leech (2007) "homogeneous sampling involves sampling individuals, groups, or settings because they all possess similar characteristics or attributes" (p. 112). A training supervisor selected three student teachers who experienced similar typical problems during their internship. These student teachers were involved,

because during this study the focus was on the typical problems student teachers experience during their internship. The university teachers who were involved were teaching in the pedagogy course, the minor inclusive education and/or training supervisors. The university teachers were selected by expert sampling (Trochim, 2006). According to Trochim (2006) "expert sampling involves the assembling of a sample of persons with known or demonstrable experience and expertise in some area" (para. sampling). Ultimately two university teachers were selected from the course pedagogy and training supervisors. In this study the student teachers and university teachers were involved to get a better understanding of the problem of the student teachers, the target context and the needs of the student teachers and university teachers (McKenney & Reeves, 2012). These university teachers were involved, because of their expertise.

3.2.3 Respondent for sub question: What are the experiences of student teachers in a simulation?

11 third year student teachers of the minor inclusive education were involved in experiencing in a simulation. The student teachers were selected by criterion sampling and by convenience sampling (Onwuegbuzie & Leech, 2007). According to Onwuegbuzie and Leech (2007) "in criterion sampling, individuals, groups, or settings are selected that meet criteria" (p. 114). According to Onwuegbuzie and Leech (2007) "convenience sampling techniques used by qualitative researchers involves selecting individuals or groups that happen to be available and are willing to participate at the time" (p. 114) .A class of third year student teachers was selected, because they already have a reasonable amount of experience in education, so these student teachers meet this criteria. In addition, this group of third year student teachers had the choice to participate in this study or to participated in the regular assignment for their course, so 11 student teachers chose to participate in this study.

3.3. Instrumentation

Data collection was done through the use of five instruments. Table 3.2 describes the research questions with their related instruments. This table shows that at least two instruments for answering sub question one and three. For sub question two the same instrument was used for both student teachers and university teachers. This was done because according to McKenney and Reeves (2012) "it is also preferable to employ several methods per question, as methods triangulation yields a more robust data set" (p. 97).

Table 3.2

Instrumentation

Research questions	Instrumentation
Sub question 1 Which competences are taught during teacher training and are related to positive behaviour support?	• Document analysis • Focus group
Sub question2 What are the problems and needs of student teachers in creating an effective and positive learning environment?	• Focus groups
Sub question 3 What are the experiences of student teachers in a simulation?	• Focus groups • Observation • Questionnaire

3.3.1 Document analysis

The purpose of the document analysis was to determine whether the principles of PBS covers all the seven competences of teacher education. The study guide 2012-2013 of the teacher training institute of Windesheim University of Applied Sciences was used for the document analysis. The study guide was used to look for connections between PBS and the competencies that are taught at the teacher training instiue.

3.3.2 Focus group

The purpose of the focus group was to determine the problems that student teachers might experience in creating a positive and effective learning environment in the classroom, what their needs are in learning this and how the student teachers think about a simulation as a possible learning tool for creating a positive and effective learning environment in the classroom. The purpose of the focus group for university teachers was the same, only one goal was added: are the university teachers familiar with the term PBS and cover the principles of PBS all of the seven competences of teacher education. After the goal of the focus group was made clear a moderator's guide was prepared for the student teachers and the university teachers by using the book of Vaughn, Shay Schumm and Sinagub (1996). This book was used to get a clear idea about the steps to take for conducting a focus group in educational settings (Vaugh, Shay Schumm, & Sinagub, 1996). In addition to this book, the literature from the theoretical framework was used for drafting questions for the focus group and interview. The moderators guide was discussed with an expert on focus groups. This feedback was used to adapt the moderator's guide.

In order to fit in with the purpose of the focus group, the focus group included questions about the problems and needs that student teachers experience and questions about simulations. The university teachers were also given a number of additional questions on PBS. Below are some sample questions

in each category, for all the questions, see the moderators guide in Appendix 2 for the student teachers and Appendix 3 for the university teachers.

Please view the six research-based elements of Marzano, Marzano and Pickering (2003):
- Do you recognize these points?
- What do you find easy?
- What do you find difficult?
- How will you handle this?
- How do you learned or developed this?
- What would you like to learn more to be more skilled?
- How do you learn this within the teacher training institute?

Please look at the pictures of the simSchool, an example simulation:
- What appeals to you in this?
- What does not appeal to you in this?
- Has learning in a simulation an added value for the teacher training institute?
- How does the simulation contribute to narrowing the gap between teacher training and practice?
- Which features or tools must be created in a simulation to contribute to create an effective and positive learning environment? (such as a form of reflection, collaborative learning, discussion platforms and so on)

3.3.3 Questionnaire

The purpose of the questionnaire was to determine the experiences of the student teachers in a simulation. The simSchool Feedback Survey from Knezek and Christensen was used for the questionnaire (see Appendix 4). This questionnaire was adjusted based on the literature and the feedback from the first and second supervisor. The questionnaire about adjustments that should be made in a new simulation was filled in after three half an hour of lessons in simSchool, these lessons were composed by Hettler et al. (2008).

The questionnaire consisted of 21 questions, including five closed questions, 14 open questions and two were both closed and open questions. These questions were related to the experiences of the student teachers in the simulation simSchool and what student teachers found important elements that should be included in or added to a new simulation. First of all the questionnaire started with some general questions regarding to the simulation simSchool. In addition, there were a number of questions based on the advantages and disadvantages of student teachers in the simulation. There were also a number of questions based on what should be changed or modified in a new simulation. Below are some sample questions, for all the questions see the questionnaire in Appendix 7.

Were you before you started working in simSchool already familiar with a simulation?
o   Yes
o   No

Rate your experience in simSchool

1	2	3	4	5
poor	moderate	sufficient	good	excellent

Give at least two points you like about simSchool and that should be included in the new simulation?

Could you interpret the graphs during simSchool? Explain.

What needs to be different in a new simulation to be an important tool for the teacher training institute?

3.3.4 Observation

The purpose of the observation was to determine how student teachers worked in the simulation simSchool. During the lessons the student teachers were observed, while working in the simulation. The observation paid attention to the posture of the student teachers while working in the simulation and how they exactly worked in the simulation. During the lessons simSchool everything was recorded. The video camera was in front of the classroom, so all student teachers are in the picture, therefore it was invisible what the student teachers were doing behind the laptop. The recorded observations were used to look back and replenish the observations. Thus the recorded observations were used as a back up and not a primary source. Below are some criteria that were observed.

Do the student teacher consult each other?

How is the cooperation between the student teachers?

Do the student teachers first view the profile of the pupils before they start the lesson?

How do students look at the data that is shown at the end of the lesson in the simulation?

3.4 Procedures

For each sub question the procedure will be worked out separately, in order to get a complete picture of the procedure.

3.4.1 Procedure for sub question: Which competences are taught during teacher training and are related to positive behaviour support?

First of all in the document analysis a list of characteristics of positive behaviour support was compiled, these characteristics were established from the literature. After that the study guide 2012-2013 of the teacher training institute of Windesheim University of Applied Sciences was analysed through document analysis, to see which competences student teachers should master. The characteristics of positive behaviour support were linked to the competences of the study guide 2012-2013.

3.4.2 Procedure for sub question: What are the problems and needs of student teachers in creating an effective and positive learning environment?

To arrange respondents for the focus groups, an employee of Windesheim University was contacted. The employee selected three student teachers and several university teachers of the pedagogy course, the minor inclusive education and training supervisors. These student teachers and university teachers were mailed, containing a brief explanation of the study and why their participation was important for this study. All of the three student teachers were interested and two university teachers were interested to participate in the focus group. One student teacher was unable to attend the focus group session. Therefore an individual interview was held using the same protocol. Hereafter the moderator guide was made, a time schedule was made for the focus group and interview to complete it in an hour and a PowerPoint was made, so the student teachers and the university teachers could see the questions. In addition, a camera and an audio device was reserved and a room inside Windesheim was also reserved. The focus group and the interview were recorded, so at the end the focus group and the interview could be transcribed, after which everything was coded by using the coding scheme (see Appendix 5). This coding scheme was compiled on the basis of section 2.4 of the conceptual framework.

3.4.3 Procedure for sub question: What are the experiences of student teachers in a simulation?

First of all, an introduction was given to the third years student teachers of the minor inclusive education at Windesheim University in which the student teachers could indicate if they wanted to participate. Finally there were 11 student teachers who wanted to participate. During the first meeting the student teachers were introduced to the simulation simSchool. The student teachers could experiment in pairs in the simSchool simulation. During the second and third lessons the student teachers did lessons in simSchool in pairs with different pupil profiles and different numbers of pupils. During the second lesson two student teachers were absent. After the third lesson, the student teachers filled in the questionnaire about the the simSchool simulation. They were asked what should remain or what should be changed when a new simulation will be developed. During the three lessons in the simSchool simulation student teachers were observed, both during the lessons and after the lessons.

3.5 Data analysis

Finally for each instrumentation the data analysis will be worked out separately, in order to get a complete picture of the data analysis.

3.5.1. Document analysis

The study guide 2012-2013 of the teacher training institute of Windesheim of Applied science was analysed. All the PBS-elements and competences of the study guide were linked to each other, to see which characteristics of PBS could be connected tothe competences of the teacher training course.

3.5.2 Focus group

When the focus group interview was done, first of all the most important subjects were written down, after which the focus group was transcribed. After this, in the transcribed focus group session the most important parts were marked. All marked parts received a code. These codes were compiled on the basis of section 2.4 on the conceptual framework. All these codes were discussed with the external supervisor, to add corresponding codes together and to reformulate codes. All these codes were merged in one table, see Appendix 5.Then all marked pieces in the two focus groups and one interview were recoded. Another person has also coded all marked pieces of one whole focus group, of the university teachers, in order to measure the reliability with Cohen's Kappa. Cohen's Kappa was calculated via excel with imported formulas (see Appendix 6). Cohen's Kappa via excel is 0.60, this means reasonable agreement between the two raters.

After coding the marked pieces of the simulation, the characteristics of a new simulation, were divided into the eight codes described at the end of section 2.4, (1) personalized, (2) motivating, (3) resembling reality, (4) complexity of reality, (5) cooperation, (6) reflection, (7) levels, and (8) blended learning.

3.5.3 Questionnaire

The questionnaire consisted of 21 questions. These questions were both open ended and closed questions, so qualitative and quantitative analysis was needed. The qualitative data was analysed by coding all the answers for each question. This was the same coding procedure that was used in the focus groups as described above. Thus the coding scheme was the same as the coding scheme used in the focus groups (see Appendix 5). After coding the qualitative data, the 36 simulation codes in Appendix 5 were combined in consultation with the external supervisor to the codes used as headings in chapter 4.3. After all the questions were coded, a distinction was made between advantages of a simulation, disadvantages of a simulation and characteristics for a new simulation. The characteristics of a new simulation were, after coding, divided into the eight codes described at the end of section 2.4, (1) personalized, (2) motivating, (3) resembling reality, (4) complexity of reality, (5) cooperation, (6) reflection, (7) levels, and (8) blended learning. The quantitative data was analysed to display it in a table.

3.5.4 Observation

The observations were carried out during three lessons of simSchool. These observations were transcribed for each respondent, after which all the observations were coded. The same procedure for coding was used as described above, so the coding scheme for the observation was the same as the coding scheme used by the focus groups and the questionnaire (see Appendix 5).

4. Results

Chapter 4 is organized into three sections. Section 4.1 describes the results of the document analysis, with the related sub question1: Which competences are taught during teacher training and are related to positive behaviour support? Section 4.2 describes the results of the focus groups and the interview, with the related sub question: What are the problems and needs of student teachers in creating an effective and positive learning environment? Finally, section 4.3 describes the results of the focus groups, questionnaire and observations, with the related sub question: What are the experiences of student teachers in a simulation?

4.1 Which competences are taught during teacher training and are related to positive behaviour support?

PBS can be characterized by five important principles guiding the PBS framework: (1) working school wide, (2) prevention, (3) positive approach, effective rules, teaching behavioural expectations and consequences, (4) decision-making on the basis of data and (5) collaboration with parents and chain partners (Bradshaw et al., 2009; Goei et al., 2010/2011; Hieneman, Dunlap, & Kincaid, 2005; Horner et al., 2005; Horner et al., 2009; Ruef et al., 1998; Warren et al., 2006; Goei et al., 2013). These five principles are used during the document analysis, to determine which competences of the teacher training institute of Windesheim University are related to the five principles of PBS. At the teacher training institute Windesheim at Zwolle seven competences are taught. These competences are (1) interpersonal competence, (2) pedagogical competence, (3) professionally competence, (4) organizational competence, (5) collaboration with colleagues, (6) collaboration with the environment and (7) reflection and development. Below each competence is described, thereafter each PBS principle is discussed separately and described which competences are covered by the PBS principles. All seven competences of the teacher training institute are placed next to the five PBS-principles. All the competences are related to the PBS-principles, see Table 4.1. This was confirmed by the university teachers in the focus group.

Table 4.1

The seven competences related to the five PBS-principles

	Working school wide	Prevention	Positive approach, teaching behavioural expectations and consequences	Decision-making on the basis of data	Collaboration with parents and chain partners
Interpersonal competence	X	X	X		X
Pedagogical competence		X	X		
Professionally competence		X	X	X	
Organizational competence		X	X	X	
Collaboration with colleagues	X	X		X	
Collaboration with the environment	X	X		X	X
Reflection and development				X	

4.1.1 Describing each competence

4.1.1.1 Interpersonal competence

The teacher should ensure that there is an enjoyable learning and working climate in the classroom. The teacher in interpersonally competent when he or she is able to do this. A teacher who is interpersonally competent provides leadership in a good way, creates a friendly and cooperative atmosphere, ensures open communication, promotes the autonomy of the pupils. The teacher is looking for a balance in the interaction with the pupils between:

- Leading and guiding;
- Sending and tracking;
- Confronting and reconciling;
- Correcting and fostering.

4.1.1.2 Pedagogical competence

The teacher should promote the social-emotional and moral development of the pupils. The teacher should also help the pupils to become independent and responsible individuals. The teacher is pedagogically competent when he or she is able to do this. A teacher who is pedagogically competent create a safe environment in the class and lessons and ensures that pupils:

- Know that they belong and are welcome;
- Know that they are appreciated;
- Interact in a respectful way;
- Are challenged to take responsibility for one another;
- Able to take initiatives and work independently.

4.1.1.3 Professionally competence

The teacher should help pupils to master the learning goals, which is summarized in the guidelines of primary education. The teacher should be professionally competent to fulfil this. A teacher who is professionally competent designs a powerful learning environment in the class and lessons. Such a teacher:

- Adjusts the learning content, adapts it to the needs of the pupils and takes into accout individual differences;
- Motivates the pupils for their learning tasks, challenges them to make the best of it and help the pupils to complete successfully;
- Teaches the pupils to learn, also collaboratively, to promote their independence.

4.1.1.4 Organizational competence

The teacher is responsible for all aspects of classroom management. The teachers should be organizational competent to fulfil this. A teachers who is organizationally competent creates a clear, orderly and task-oriented atmosphere in the classroom and lessons. Such a teacher ensures that pupils:

- Know what their position is and what room they have for individual initiative;
- Know what to do, how and for what purpose.

4.1.1.5 Collaboration with colleagues

The teacher should see to it that his work and the work of his colleagues are well matched and should contribute to the good functioning of the school organization. The teacher should be competent in collaboration with colleagues to fulfil this. A teacher who is competent in collaboration with colleagues contributes to a well-organized pedagogical and organizational environment, to a good cooperation and a proper school organization. This means that such a teacher:

- Communicates and collaborates well with colleagues;
- Provides a constructive contribution to meetings and other forms of school consultations and to the work that has be done in the school to function properly;
- Provides a contribution to the development and improvement of the school.

4.1.1.6 Collaboration with the environment

The teachers should liaise with parents or caretakers of the pupils. The professional actions of the teacher and other people outside the school (e.g. youth care) should be attuned to each other. The teacher should be competent in collaboration with the environment to fulfil this. A teacher who is competent in collaboration with the environment contributes to a good collaboration with the environment and good collaboration with people and institutions in the area of the school in the interest of the pupils. This means that such a teacher:

- Maintains good contacts with the parent or caretakers of the students;
- Maintains good contacts with other people and institutions that work in youth organizations.

4.1.1.7 Reflection and development

The teacher should constantly develop and professionalize himself. The teacher should be competent in reflection and development to fulfil this. A teacher who is competent in reflection and development thinks frequently about his professional beliefs and professional abilities. The teacher strives to maintain and improve this professional practice. Such a teacher:

- Knows what they consider as important in their teaching and which values, standards and educational principles are important in their teaching;
- Has a good picture of his own abilities, their strengths and weaknesses;
- Works in a systematic way in order to develop further;
- Adjusts his personal and professional development to the policy of the school and utilizes the opportunities that the school offers to develop further.

(Windesheim University of Applied Sciences, 2012).

4.1.2 PBS-principles and competences

4.1.2.1 Working school wide

Working school wide means there should be a broad cooperation in a PBS school, where teachers, parents, pupils and chain partners are involved and working together. The PBS-principle working school wide is clearly related to three competences, namely interpersonal competence, collaboration with colleagues and collaboration with the environment. The competence interpersonal is not so clear related to the PBS-principle working school wide as the two competences related to collaboration with colleagues and the environment. The interpersonal competence is related to working school wide, because through formulation school-wide expectations, teachers could create an enjoyable life and work climate.

4.1.2.2 Prevention

The PBS-principle prevention aims to reduces disruptive behaviour, enhance social competence and foster student learning. Prevention takes place at three different levels, primary system of support, secondary system of support and tertiary system of support. Prevention is related to six competences, namely interpersonal competence, pedagogical competence, professionally competence, organizational competence, collaboration with colleagues and collaboration with the environment. The

last two competences are clear, because prevention should be done in collaboration with colleagues and the environment. The other four competences are also clear, because the other four competences are also needed for prevention.

4.1.2.3 Positive approach, effective rules, teaching behavioural expectations and consequences

The PBS-principle positive approach, teaching behavioural expectations and consequences is a comprehensive concept. To summarize this principle briefly, this principle aims to establish a positive approach to pupils and to establish clear rules, corresponding expectations and consequences. Positive approach, effective rules, teaching behavioural expectations and consequences are related to four competences, namely interpersonal competence, pedagogical competence, professionally competence and organizational competence.

4.1.2.4 Decision-making on the basis of data

The PBS-principle decision-making on the basis of data is, as the word implies, is to make choices based on the data. The data can be obtained in different ways, for instance through interviews and reports. Decision-making on the basis of data is related to five competences, namely professional competence, organizational competence, collaboration with colleagues, collaboration with the environment and reflection and development. It is clear that this PBS-principle is related to the competence reflection and development. The other four competences are clear.

4.1.2.5 Collaboration with parents and chain partners

The PBS-principle collaboration with parents and chain partners is not only about the collaboration between the teacher and the pupils, but also with other people around the pupils. Collaboration with parents and chain partners is related to only two competences, interpersonal competence and collaboration with the environment. It is clear to see that this PBS-principle is aligned to the competence interpersonal and collaboration with the environment.

4.2 What are the problems and needs of student teachers in creating an effective and positive learning environment in the classroom?

From the literature, six research-based elements emerged for teachers to create an effective and positive learning environment, (1) rules, expectations and procedures, (2) disciplinary interventions, (3) teacher-student relationship, (4) mental set, (5) student's responsibility for management, and (6) getting off to a good start (Marzano, Marzano, & Pickering, 2003). These elements were used as interview topics during the focus groups, to determine of student teachers have problems with these subjects and of student teachers needs more training in these points. Below, each research-based element is discussed separately, looking at the problems and needs of the student teachers and problems and needs of student teachers according to the university teachers.

4.2.1 Rules, expectations and procedures

4.2.1.1 University teachers

University teachers identified three main problems in relation to rules, expectations and procedures. These concern: predictability, the consequent use of the rules and determine boundaries. The first problem is the *predictability* of the student teachers to the pupils in the classroom. An example was that one of the university teachers was in a internship visit at a first year student teacher, the student teacher let the pupil take their writing workbook and after that the pupils were talking to each other. Herein the student teacher forget to be predictable to the pupils, so the pupils do not know what they have to do when they take their writing workbook. In this way pupils get in a vacuum that they can fill by themselves and the student teacher is then trying to show that the pupil should be quite and do not talk with each other. This can be prevented if the pupils know what the student teacher expect from them. This problem continues throughout the teacher training, because third year student teachers and fourth year student teachers experience also problems with predictability. The third year student teachers experience problems when they have to teach the whole day, instead of individual lessons, and have to deal with lesson transitions. In this way student teachers are not able to keep order in the classroom. This has according to the two university teachers to do with the predictability or with the learning environment, which is not in order. In addition fourth year student teachers have difficulty in differentiation between the pupils, one pupil complete the sum quicker than other pupils. For this, one university teacher indicated that a simulation is proper, to program this type of problem. Student teachers can practice when some pupil is earlier done with their work and you can check have you said all you need to say or have you everything on the board what should be on the board. The second and third concerns that university teachers appointed *is the consequent use of the rules* and *determine boundaries*. In addition, one university teacher appointed an example in which a student teachers wants to proceed the lesson quicker and will not respond to primary reactions of pupils, because it has been agreed that pupils are not shouting in the classroom, and sometimes the student teacher react to it, because he or she wants that the lesson go faster or something like that.

"So a little boy yesterday was shouting something in the class, okay, than you can just write it in a manner of speaking, so the pupil was put in the wrong mindset, okay apparently if I just do something that is no good, than I get positive attention" (University teacher A, focus group).

4.2.1.2 Student teachers

Student teachers identified four main problems in relation to rules, expectations and procedures, these concern: different mentality and other norms and values, consequent use of the rules, flexibility and pace and alignment. A student teacher appointed problems concerning rules when parents have a *different mentality and have other norms and values* than the school.

"Parents do not abide the rules, that's a bit of oh we'll be late and that still does not matter and well if my children have a big mouth, we do not mind" (Student teacher E, interview).

This student teachers indicated that she need more guidance on how to deal with parents who do not abide the school rules, who have a different culture and how do you come on a common line with parents about the rules and how do you deal with these pupils, who have a different upbringing and have different norms and values. This student teacher indicated that she had at a certain moment the tendency to react negatively to these pupils. Another student teacher had also troubles with rules, but then with how do the pupils do what the student teacher want them to do and also with the *consequent use of the rules* after the rules are applied to the pupil.

"I always want the fun, loving and kind teacher, but then at a certain point you realize you cannot only be liked, you should just intervene, you have to emit a kind of authority and you should make sure that the pupils see you as the teacher and not as a friend" (Student teacher C, focus group).

Two other student teachers had also problems with the rules, but then with the *flexibility*, anywhere and at any school and class the rules are different, so the student teachers have difficulties to respond to this and to take this into account. In some school the rules were not clearly established by the teachers itself and the student teacher found it difficult to say we now propose rules in the class, because he is a trainee. In addition, this student teacher indicated mainly have problems with the transition from teaching in a sport hall to teaching in the classroom.

"I come from the education program of sports and education and I gave lessons in a sport hall and there you have just completely different rules and routines and different use of your voice" (Student teacher D, focus group).

Pace and alignment is another problem of one student teacher, she wants to teach to fast. She feels that she talks too much to preschool pupils and then you talk sometimes over it, so the preschool pupils do not hear it.

There are one agreement between the university teachers and the three student teachers, having problems or had problems with the consequent of the rules, but both problems are in another form.

4.2.2 Disciplinary interventions
4.2.2.1 University teachers

University teachers identified four main problems in relation to disciplinary interventions, these concern: dare to intervene, when intervening in negative behaviour, how to intervene when negative behaviour occurs and fulfilment of feedback they received. University teachers indicated that student teachers have problems with *dare to intervene*, because they are looked on the fingers by the coach or university teachers. One university teacher indicated that a coach goes out the class occasionally, so the student teacher will have the opportunity to do what they want to do. Dare to intervene is not the only problem student teachers experience, but the second problem is *when intervening in negative behaviour*. One university teachers noticed that student teachers have the image, that you only should be positive, you go especially rewarding positive behaviour and should not be negative to the pupils. These university teacher gives the example that student teachers let continue to far, so the student teachers have to connect a very unpleasant consequence to that. Both university teachers experiences that student teachers have also problems with *how to intervene when negative behaviour occurs*. When a coach says to a student teacher that pupils are allowed to proceed slightly harder, than some student teachers carry on too far and then you have half witches in front of the classroom.

> *"They sometimes lose control and then you have half witches in front of the classroom, who at the slightest than sit on top of that, than you should really write it's quite nice here, so why are you doing so and what are you still contribute to the atmosphere in the classroom" (University teacher A, focus group).*

One last point op problems, according to the university teachers, the student teachers are struggling with the *fulfilment of the feedback they received*.

4.2.2.2 Student teachers

Student teachers identified three main problems in relation to disciplinary interventions, these concern: how to give positive feedback, how to intervene when negative behaviour occurs and how do I feel. A pitfall, two student teachers mentioned is that they give few positive feedback to the pupils, so they have problems with *how to give positive feedback*. Humans are going quicker to the negative and names quicker the negative points than the positive points and if there are few negative points, you have to start thinking of yourself, I do have to continue to give compliments every day.

> *"Last year when I was teaching a difficult class and then you are really doing good of okay that group is quiet , I am going to compliment that group and that group is not quiet, I am going to ignore that group. And now all the pupils are quiet, that is the tricky part, they have to receive appreciation for what they do" (Student teacher D, focus group).*

One student teacher had also problems with *how to intervene when negative behaviour occurs*, he had a difficult class and few gifted pupils who thought they knew everything better than anyone. He found it very difficult to take this into account and then he fall quickly in saying do not do that and do normal. Another student teacher found this also difficult at the beginning of het previous education, teaching assistant, with pupils form grade six, which gave a bit mouth and laughed in her face, now she can handle this. The other student teacher complemented this by indicating that he will find it difficult to clearly appoint the negative feedback and raise awareness. This student teacher also indicated that it was very tiresome to do an internship in a difficult class. Another problem *is how to give positive feedback.* The student teacher find it difficult that one pupil in the classroom have concentration problems and he wants to give a compliment to this pupil, because he actually does the same at the same time as the other pupils in the classroom, but this pupil find this more difficult, so this is a compliment for him. A student teacher indicated that *how do I feel* is an important factor. She believes that she has no need to be more skilled at this point. The other two student teachers also agreed that they do not need more training to be more skilled at this point. The teacher education program pays sufficient attention to this point. This point should come back in everywhere, but it should not be the specific topic. The important thing is that you have to give the lessons well and the lessons should be didactical well and therefore you do not need this for example as the subject of a report.

Between the student teachers and the university teachers is an agreement about the problems student teachers experience according to disciplinary interventions. Both indicate that they have both problems with how to intervene when negative behaviour occurs.

4.2.3 Teacher-student relationship
4.2.3.1 University teachers

University teachers identified two problems in relation to teacher-student relationship, these concern: tune to the group and entering into positive relationships/building positive relationships with pupils. Both university teachers indicated that student teachers can do this pretty good. There are indeed some student teachers who have problems with the teacher-student relationship and especially when it comes to problems with *tune to the group*, being able or willing to empathize or *entering into positive relationships/building positive relationships with pupils*, if the pupils in the class think that the student teachers is not someone we are going to do great things with, if pupils feels this it does not work. Both university teachers agreed that teacher-student relationship is the main point and actually supposed to be on top. A university teachers shows an example of a former colleague who was very good at the teacher-student relationship and not very good in the other research-based elements, but it works like a train, the pupils did what the teacher said, not because he was so consequent, but the pupils did that for the teacher.

4.2.3.2 Student teachers

Student teachers identified one main problem in relation to teacher-student relationship, these concern: it should be in your genetics. The three student teachers agreed that they do not need more accompaniment for the teacher-student relationship. One student teacher indicated that some other student teachers will need to get more training in this through a lecture or a workshop on how they can easily build up a relationship with pupils, but do not think this is necessary for all student teachers. All three student teachers experienced no problems with building up a teacher-student relationship. One student teacher indicated that this *should be in your genetics*, you cannot really learn this, it is how you are and how you make contact with someone, so you cannot change that.

> *"I just do my thing with the pupils and you just do fun things before the lessons and show more of yourself, oh this is me and I do this and I can do this and then the pupils will naturally open slowly but surely. Throughout the year, you actually get a good relationship with the pupils in the classroom"* (Student teacher C, focus group).

> *"I think it is actually a kind of game you play, you may sometimes joking, but you should keep in mind okay this is enough and then you have to step back and stand above. I think that it is just fun, to find these balance. It is very important that you find that balance, because they really look up to you, but they dare also to go to you with their problems"* (Student teacher D, focus group).

Both the university teachers and the student teachers indicated that student teachers have little or no problems with building a teacher-student relationship. When looking at the problems, there are no similarities between the university teachers and the student teachers.

4.2.4 Mental set

4.2.4.1 University teachers

University teachers identified two main problems in relation to metal set, these concern: determine boundaries and confidence to let go. University teachers indicated that student teachers have problems to *determine boundaries*. Usually it is the case that it happens and at one point student teachers react on that, some kind of impulsive and when the coach of university teacher talks about it, student teachers notice that they have a different image of it, then that they might act, but that they are not very clear in advance to think about how they will do it. A second point of problems with mental set that student teachers have is *confidence to let go*. Student teachers who have problems with this point, provide classical lessons and are very teacher-driven. Student teachers find it difficult to do cooperative learning, because it becomes very noise and things happened over which the student teacher have no view. These student teachers would like the pupils work very quiet and as soon as possible. Some student teachers find this very safe and dare not more than this. The university teachers think they teach all kinds of things for creating a positive learning environment and the student teachers need to practice all these kind of things in practice.

4.2.4.2 Student teachers

Student teachers identified three main problems in relation to mental set, these concern: self-regulation, pace and alignment and flexibility. A student teacher indicated that she had problems with *self-regulation*, during her previous education of classroom assistant, problems when a pupil gets angry and she do not know how to handle this. Two other student teachers appointed problems with *pace and alignment* and with *flexibility*.

> *"I had it mainly that I realized that pupils understand what I want, they want actually want to work, but I think yes I have prepared this and this, so I would like to do that. I was never very good in plans, still do not. But as I planned, it should be tight, tight, tight" (Student teacher C, focus group).*

There is no agreement about the problems student teachers experience and the problems that student teachers experience according to the university teachers.

4.2.5 Student's responsibility for management
4.2.5.1 University teachers

University teachers identified three main problems in relation to student's responsibility for management, these concern: giving space to pupil, relying on the power of pupils and maintain control/let go. University teachers indicated that student teachers have problems with *giving space to pupils*.

> "Student teachers run automatically a lot through themselves, even when it comes to give space, because it is safer than when you give a lot of space to the pupils. Sometimes it is self protection to do it so, in order to give just little less responsibility away" (University teacher B, focus group).

A second problem university teachers mentioned is *relying on the power of the pupils*, if student teachers will make pupils responsible, time should be taken and taking this times is quite difficult for student teachers. The third problem university teachers see by student teachers is problems with *maintain control/let go*, when the pupils discuss something, clean up or regulate something, it is not completely silent, which student teachers find difficult. According to the university teachers this part can be incorporated into a simulation.

4.2.5.2 Student teachers

Student teachers identified three main problems in relation to student's responsibility for management, these concern: relying on the power of the pupils, pace and alignment and consequent use of the rules. One student teacher mentioned to have problems with *relying on the power of the pupils*, he have now less difficulty then last year with pupil's responsibility for their tasks and have less trouble with the confidence to let pupils devise their own rules.

> *"Now it is a Montessori school, where pupils are accustomed with taking responsibility and independent. Then it is easy to keep going on that, then to start it by yourself"* (Student teacher C, focus group).

Another student teacher mentioned that he had also problems with relying on the power of the pupils, he indicated that you never know what comes out of the pupils, you have an image for yourself how you would like to have it and pupils do not phrase it beautiful.

> *"You would obviously not to truncate what they say. Sometimes they really convinced I have something very beautiful, a beautiful rule and that can we do. Then I think yes, but that does not work, I do not like the rule. And it is hard to say, in such a way that they have not a bad feeling about it, because you truncates it"* (Student teacher D, focus group).

Pace and alignment is also an problem of student teachers, if you have a younger class than it is difficult to get it out of the pupils. One student teacher had also problems with pupil's responsibility with a younger class.

> *"I have sometimes time pressure, I experience with cleaning up, so you want them to promote independence of cleaning up together and then it takes me too long and then I already clean up the bookcase or I do this or that, that is one thing I still need to think about".* (Student teacher E, interview).

Another problem of a student teacher is the *consequent use the rules*. When the light is red and the pupil came to her, she will help the pupil, while red means the teacher must not be disturbed. Basically she would help and guide all pupils, but occasionally guiding is also saying dissolvable. One student teacher needs to learn more about how do I set it well with pupils and how do I that together. Another student teacher from distance learning, needs more guidance at all these points, through roll play activities, movies or a workshop. In addition, this student teachers indicates that student teachers with no experience need more guidance, because the step is too large.

> *"Let them do more, because practice has shown, by doing this by yourself, to experience by yourself, you learn more"* (Student teacher E, interview).

> *"Because they say you really need to meet the different intelligences of Gardner, but Windesheim University does not do that quite well"* (Student teacher E, interview).

Both the university teachers and the student teachers indicated that student teachers have problems with relying on the power of pupils. In addition, student teachers mentioned more problems they experience during teacher training.

4.2.6 Getting off to a good start

4.2.6.1 University teachers

University teachers identified two main problems in relation to getting off to a good start, these concern: preparing their own introduction and trainee roll change to teacher. University teachers indicated that student teachers have problems *with preparing their own introduction*. Student teachers should think about a good start, what would I say, how look a good start, keep I sitting or should I stand and how am I going to do the good start. University teachers indicated that not only student teachers have problems with getting off to a good start, but also the teachers themselves. In addition, university teachers noticed that fourth year student teachers have problems with the *trainee roll change to teacher*, thus the transition from the first half year to the last half year, where they are the actual teacher of the class.

4.2.6.2 Student teachers

Student teachers identified three main problems in relation to getting off to a good start, these concern: authority, following and appreciating the development of the pupil and how to guide the development of the pupil. One student teacher indicated that he had problems with *authority*. In his first year of his internship he struggled to show to the pupils that he is the one with authority.

> *"I found it difficult to show this, that you do not want that pupils see you as acorn. I want them to find me nice, but at some point you let this go, at the beginning of the year pupils do not necessarily liked me, I know that the pupils at the end of the year or when I open up more, they find me nice or nicer and with some pupils do you have less than with other pupils"* (Student teacher C, focus group).

Another student teacher have also problems with authority, especially in the higher grades. If you do not start at the beginning of the school year, the pupils have already an authority, if you start also at the beginning of the school year the pupils know that they have two teachers. Another problem of one student teacher is that he had problems *with following and appreciating the development of the pupil*. In the first week of the new school year the class have already a certain group composition. If you begin in the first week you will see occur this and you can take this into account, otherwise you have to find this out in the hard way. Another student teacher mentioned that she had also problems with following and appreciating the development of the pupil, if she not starts at the beginning of the school year in a group. The student teacher do not know what growth a pupil has made, which is very difficult to estimate, and if you start at the beginning of the school year you have some time to get to know this pupil.

> *"I think that it is important to know, that you think that pupils cannot do that or he is lagging behind, yes, but he may already have such a leap compared to before"* (Student teacher E, interview).

Student teacher have also problems with *how to guide the development of the pupil* in the classroom, when you do not start at the beginning of the school year.

> *"It takes a while before you have a clear picture and in terms of guidance, you have to give some guidance that pupils would need and if you enter later, especially in the last part of the year, you still have certain requirements that pupils need at the end of the year and then it is sometimes difficult to give good guidance" (Student teacher E, interview).*

There is no agreement about the problems student teachers experience and the problems that student teachers experience according to the university teachers. There is an agreement between the problems student teachers experience during teacher training, problems with authority and problems with following and appreciating the development of the pupils

4.3 What are the experiences of student teachers in a simulation?

For the questionnaire, the simSchool Feedback Survey from Knezek and Christensen is used (see Appendix 4). This questionnaire is adjusted on the basis of the conceptual framework and the feedback from the first and second supervisor. The questionnaire is filled in after following three lessons in simSchool. After the questionnaire is filled in all the questions are coded. Below, each code is discussed separately, looking at advantages, disadvantages and additions for a new simulation.

4.3.1 General information about the experiences of student teachers in the simulation simSchool

Eight of the 11 third year student teachers from the minor inclusive education indicated in the questionnaire that they are familiar with a simulation. Of which seven student teachers have previously worked in a simulation, such as flight simulator, football manager, simscity, sims and rollercoaster tycoon.

Two student teachers assess in the questionnaire their experience in the simulation simSchool as moderate, seven student teachers assess their experience in the simulation simSchool as sufficient and two student teachers assess their experience in the simulation as good, a comment was that the simulation should be in Dutch, see table 4.2 (questionnaire). A similar question was asked in the focus groups, these university teachers and student teachers had not worked in the simulation simSchool, therefore is chosen for the broader term simulation. One university teacher thinks that working in a simulation is a moderate way, one university teacher find this a sufficient way, two student teachers find this a good way and one student teacher find this an excellent way, see table 4.2.

Table 4.2

Experience in simSchool and thinking about learning in a simulation

	Bad	Moderate	Sufficient	Good	Excellent
Assess your experience in simSchool? (questionnaire)		2	7	2	
Assess your thinking about learning in a simulation? (focus groups)		1	1	2	1

4.3.2 Communication

Student teachers appreciated that the simulation captured expressions of the pupils, but were critical about the lack of non-verbal reactions of the pupils and student teachers and the language of the software. Therefore the student teachers made four additions for a new simulation, these concern:

expressions of the pupils, the simulation should be in Dutch, clicking on the emotions and the attitude of the pupils and non-verbal aspect.

Expressions of the pupils in a simulation is a good point according to a student teacher in the questionnaire, this should be according to the student teacher included in the development of a new simulation.

A disadvantage of the simulation that is mentioned in the interview is that you as teacher in the simulation cannot see the *non verbal reactions of the pupils*.

> *"I look very much at the attitude, the behaviour, the non-verbal of the pupils, it says 80-90% of a pupils and I do not see this in the simulation" (student teacher E, interview).*

In addition, this student teacher mentioned that not only the non-verbal of the pupil is important, but also the *non-verbal reactions of the teacher*, because non-verbal does very much. Hereby she indicated that the teacher should sit in a certain position and the pupil know what the teacher expected from them, so it works immediately. Another disadvantage is according to several student teachers in the focus group and questionnaire, the *language of the software*.

> *"When the simulation is in Dutch then it will be a lot easier and you can respond much quicker to the pupils. Now you are really lose a lot of time for searching the right task of comment for the pupils" (Student teacher F, questionnaire).*

In addition, two student teachers stated in the questionnaire that they have also problems with the *language of the software*, they do not understand the graphs in the simulation simSchool, because the explanation was in English, when it is in Dutch it is easier.

Two student teachers indicated in the questionnaire that when a new simulation is developed *the simulation should be in Dutch*, it is easier and you can quicker respond to pupils. Four other student teachers agree with this, they indicated that it is annoying that the simulation simSchool is in English and they prefer to choose for the Dutch language. Another point that should be considered when a new simulation should be developed is *clicking on the emotions* in the *simulation and the attitude of the pupils*, this is indicated by two student teachers in the questionnaire.

4.3.3 Connection simulation – practice

University teachers appreciated that they can practice in the simulation the rules, procedures and expectations, disciplinary interventions, mental set, student's responsibility for management and getting off to a good start. The student teachers and university teachers were critical about the connection to reality, cannot make the reactions of the pupils, cannot practice teacher-student relationship, can a student teacher take into account so many factors, to what extent the complexity and the quality you need as teacher can be translated into a simulation and you are not going to take all of the simulation literally. Therefore the student teachers made four additions for a new simulation, these concern: should be connected with practice and reality, realistic tasks and responses, pupils

should be quicker pick up the tasks student teachers give to them and should be connected to the world of experience.

In table 4.3 can be seen that one student teacher indicated in the questionnaire that the connection with practice is mean and ten student teachers scores the connection with practice very low or low.

Table 4.3

Connection with practice

	Very low	Low	Average	High	Very high
User interface	5	5	1		

Several student teachers and university teachers indicated in the questionnaire, the focus groups and the interview that the simulation simSchool cannot be *connected to reality*, because the reactions of the pupils are not real, it is very fake, you do not know the pupils in the simulation, you look at the meters and can see how pupils feel and you cannot see this in practice, each pupil is different and the idea that you can transform pupils and teacher behaviour into formulas and could practice and can translate this back into practice is unrealistic. Another disadvantage that a student teacher in the interview named is that you *cannot make the reactions of the pupils*. The two university teachers indicated in the focus group that the teacher-student relationship is the most important point, and you *cannot practice teacher-student relationship* in the simulation, but *can practice rules, procedures and expectations, disciplinary interventions, mental set, student's responsibility for management and getting off to a good start*. A comment a university teacher makes is *can a student teacher take into account so many factors.*

> *"If someone is able to record all these pupil characteristics in yourself and then imagine and then just take a good decision through something like that and then you should examine if you can also make that transfer at the moment that you are in a different situation with an airplane that comes across and Santa clause who walks by"* (University teacher A, focus group).

In addition, a university teacher mentioned in the focus group *to what extent the complexity and the quality you need as teacher can be translated into a simulation*. This is complemented by a student teacher in the focus group who are wondering whether all aspects come back in the simulation. A final disadvantage that a student teacher in the interview cited *that you are not going to take all of the simulation literally*.

When a new simulation will be developed, several student teachers in the questionnaire indicated that it should be *connected with practice and reality*, including *realistic tasks and responses*. In addition, the simulation can be an important educational tool, according to a student teacher in the

questionnaire, as the situations of practice are connected to the simulation. Only one student teacher mentioned in the questionnaire that in a new simulation *pupils should be quicker pick up the tasks that the student teachers give to them*. Finally, one student teacher indicated in the questionnaire that it *should be connected to the world of experience.*

4.3.4 Usability, clarity and understand-ability

Student teachers appreciated that the simulation is good and clearly displayed, looks good and cartoon and graphs make it more accessible, but were critical about the user interface, difficult to satisfied one or more pupils at the same time and found practice is more informative than a simulation. Therefore the student teachers and university teachers made seven additions for a new simulation, these concern: more examples and explanations, less rigid, be more concrete, clearly, nice drawing, well extended and the simulation should have an added value.

A student teacher indicated in the questionnaire that simSchool is *good and clearly displayed*, this is complemented by another student teacher in the questionnaire that the simulation *looks good.* In addition, the *cartoon and graphics make it more accessible* according to a student teacher in the questionnaire. Only one student teacher mentioned in the focus group that he sees on the one hand an added value, but on the other hand not. This student teacher also indicated that he does not know whether he was going to use it, if it is offered he would use it in class, but not thereafter. The other student teacher in the focus group indicated that he would use the simulation.

A disadvantage is the *user interface* of the simulation simSchool, seven student teacher scored in the questionnaire the usability of the simulation simSchool as mean, three student teachers scored this low and one student teacher scored this very low, see table 4.4.

Table 4.4

Usability of the simulation

	Very low	Low	Average	High	Very high
User interface	1	3	7		

A student teacher showed in the questionnaire that it is *difficult to satisfied one or more pupils at the same time*. Another disadvantage is according to one student teacher in the questionnaire that *practice is more informative than a simulation.* This is complemented by a student teacher in the interview who stated that it is better to go to practice often. This student teachers would not use the simulation, another student teacher in the questionnaire agreed with this. The student teachers in the interview, who would not use the simulation, would only look at the simulation of curiosity, to see if the simulation have tips, but she would not carry out the simulation completely, because she thinks that she does not need this.

> *"I do not think you impairs pupils if you just try something in some way, you have to watch out in any way" (Student teacher E, interview).*

Additions for a new simulation, which are mentioned in the questionnaire, are *more examples and explanations*. Student teachers mentioned five other points in the questionnaire that should be developed in a new simulation, that it should be *less rigid*, *be more concrete*, because it is very detailed, *clearly*, *nice drawing* and *well extended*. In addition one university teacher and a student teacher in the focus group indicated that *the simulation should have an added value*.

4.3.5 Opportunity to practice and critical reflection on complex educational situations

Student teachers and university teachers appreciated that the simulation captured many responses on pupils behaviour, get immediate response, can see how many different reactions are needed within a lesson and what you need to keep running a lesson, practice different situations, practice without hurting real pupils, time to make a consciously decision, help to get accustomed, respond on certain situations when you have problems in practice and come from a different direction and do not have previously worked with pupils, the simulation works for them or for first year pre-service teachers. The student teachers and university teachers were critical about trial and error, too many differences in reactions to keep running a classroom, responses of the pupils are often the same or unexpected and difficult to choose the right response, because there is amount of what you wanted to say or because what you wanted to say was not there. Therefore the student teachers and university teachers made seven additions for a new simulation, these concern: give many responses on pupils behaviour, get immediate response, can see how many different reactions are needed within a lesson and what you need to keep running a lesson, practice with complex situations, practice, after a lecture, the knowledge and make it your own, less learning differences and choices for responses, comprehensive responses from pupils or less responses from pupils.

The opportunity to practice/experiment scored from low tot very high, see table 4.5. Four student teachers scored the opportunity to practice and experiment low, also four student teachers scored mean, one student teachers scored between mean and high, one student teacher scored high and also one student teacher scored very high.

Table 4.5

Opportunity to practice/experiment

	Very low	Low	Average	High		Very high
Opportunity to practice/experiment		4	4	1	1	1

In addition another advantage is according to a student teacher in the questionnaire that you can *give many responses on pupils behaviour*. Then you *get immediate response* back from the pupils, this

could be either positive or negative. Additionally a student teacher indicated in the questionnaire that you *can see how many different reactions are needed within a lesson and what you need to keep running a lesson.* These points should be taken into account when a new simulation should be developed. Another advantage according to student teachers and university teachers in the questionnaire, focus group and interview is that you can *practice different situations* in the simulation and you can *practice without hurting real pupils.*

> *"You can also reset, and the pupil is thinking about you just as he thought before the simulation started" (Student teacher C, focus group).*

Another advantage that the university teachers put forward in the focus group, is that you have the *time to make a consciously decision.* In addition, a student teacher in the focus group found that a simulation *helps to get accustomed* a class and to get accustomed how do I take into account what the pupil needs. In this way you know what you need to consider. It is also informative for student teachers who have problems in practice, to learn how to *respond on certain situations when you have problems in practice* (questionnaire). Only one student teacher mentioned in the interview that if you *come from a different direction and do not have previously worked with pupils, the simulation works for them or for first year student teachers.*

A disadvantage of a simulation could be, according to university teachers in the focus group, that student teachers go and see what works, *trial and error*, and one university teacher wonders what you learn from this. In addition one student teacher indicated in the questionnaire that there *are too many differences in reactions to keep running a classroom* and another student teachers mentioned in the questionnaire that the *responses of the pupils are often the same or unexpected.* It is also *difficult to choose the right response, because there is amount of what you wanted to say or because what you wanted to say was not there* (questionnaire).

Several student teachers and university teachers indicated in the questionnaire, focus group and interview that when a new simulation should be developed, student teachers should be able to *practice with complex situations* that you do not always find in your internship, like a pupil with ADHD or a combination class.

> *"Look, I think it is very important that differences between pupils are made very clear in the simulation. Actually it is actually a bit extreme. That there are pupils with ODD, these pupils have problems with that, these pupil is very good in this, that you can really see what do I do with this pupil, he is extremely bad in math, he is actually too good for this level, but at the same time I have given the lessons to both pupils, in such a way that you learn to take into account these differences" (Student teacher C, focus group).*

Student teachers mentioned in the focus group and interview that you can *practice, after a lecture, the knowledge and you make it your own.* Only one student teacher indicated in the questionnaire to have *less learning differences* in the classroom. A final point of adjustment several student teachers

mentioned in the questionnaire are related to reactions of pupils, making *choices for responses, comprehensive responses from pupils or less responses from pupils.*

4.3.6 Analyzing teacher and student behaviour by using data

Student teachers appreciated that the simulation captured the graphs good, that the graphs are clear, easy to read and well-ordered. In addition the colour of the graph was clear and the 0-line was also clear, the graphs show different levels, the behaviour can be analyzed, can see immediately the effect of the actions, it is up to the task if your action has effect, can guide well the pupil, can see how pupils feel and learn, could see how the pupil scored, how the pupil responded and whether it has effect for that pupil, why pupils react at certain moment. Besides the attitudes let see how pupils learn, impression of the results and improve these results, see the decline and progress of pupils on different areas, see if tasks and responses catch on, what level they are and what they like and see clearly per element the consequences of your actions, you could see what you have to do different next time. The student teachers were critical about the difficulty to choose the correct response, the actions have no effect, pupils have a certain attitude and that was not always changing, you cannot see immediately if your action had effect, do not use the educational terms, the graphs remains fake, the clock above the pupils was difficult to interpret, do not always understand it, not useful, explanation was in English, difficult to argue why the line increase of decline and a lot of differences in line, so a student teacher wondered why is the line increasing. Therefore the student teachers made five additions for a new simulation, these concern: to see the final graph during the lesson, you can observe the behaviour and respond to it, view the statistics, improve your actions and clear and good feedback from the graphs and gauges at the end of the lessons.

Seven student teachers indicated in the questionnaire that the *graphs are good, clear, easy to read and well-ordered,* including the thermometer and the clock in simSchool, because you can see the results, the *graphs show different levels* and *behaviour can be analyzed.* During the lessons simSchool, most student teachers look at the data, the graphs and gauges.

> "The clock is at seven o'clock, so we will gave a difficult task" (Student teacher K, observation).

The observations showed also that the student teachers use the data both during and after the lessons in simSchool to see how the pupils learn. The graph showing the pupils results at the end of the lessons, some student teachers review reasonable fleeting the data and some student teachers are review the data very detailed and discover why the line is dropped or raised. Two other student teachers found the gauges good during the lessons, because you *can see immediately the effect of the actions.* Seven student teachers agreed also with the fact that actions has effect on the pupils in the simulation simSchool, see table 4.6.

Table 4.6

Have your actions affects on pupils in the simulation simSchool?

	Yes	**Sometimes**	**No**	**Barely**	**No answer**
How much?	7	2		1	1

These seven student teachers indicated that their actions affect pupils, but a student teachers mentioned that it is more negative than a positive response, another student teacher shows that it has both positive and negative effects. The more positive you are, the better it is, this is a reaction of a student teacher. It is *also up to the task if your actions has effect*, your actions affect pupils when the task is simple, but when the task is difficult the pupils do nothing. In addition, another student teacher indicated that the teachers have *guide well the pupils*, according to their profile and they respond well to it. Another student teacher saw an effect, but the effect was not what the teacher wanted. Finally a student teacher, said that your actions affect pupils, because you see pupils are going forward.

Two student teachers indicated sometimes, because it is *difficult to choose the correct response* and the other student teacher mentioned that you saw it sometimes.

One student teacher indicated barely, because it seems that the *actions have no affect* on the pupils.

One student teacher gave no straight answer if their actions affects pupils, this student teacher indicated that the *pupils have a certain attitude and that was not always changing*.

In the questionnaire four questions were drafted about the usefulness and interpreting the graphs during and after the lessons simSchool, see table 4.7.

Table 4.7

The graphs during the lessons

	Yes	**Sometimes**	**No/Not really**	**Barely**	**No answer**
Graphs during the lessons simSchool					
Where the graphs useful?	9		2		
Could you interpret the graphs?	9		1	1	
Graphs after the lessons simSchool					
Where the graphs useful?	9		2		
Could you interpret the graphs?	7	1	2	1	

Where the graphs useful?

Nine student teachers in the questionnaire found the graphs useful during the lessons simSchool and after the lessons simSchool. The graphs were useful during the lessons simSchool, because the graphs are *easy to read and well-arranged*. Two student teachers in the questionnaire indicated that you *can see how pupils feel*, of which one student teacher mentioned that you can also see how they *learn*. In addition, you get also *an impression of the results and improve these results*, by making use of the graphs. You can also *see the decline and the progress of the pupils on different areas*. By using the graphs you can also *see if the tasks and responses catch on, what level they are and what they like*. Finally one student teacher indicated that *you cannot see immediately if your action had effect*. The graphs were useful after the lesson simSchool, because you could *see clearly per element the consequences of your actions, you could see what you have to do different next time*. In addition, you could also see *how the pupil scored, how the pupil responded and whether it has effect for that pupil.* The graphs can be used if you want to find out *why pupils react at certain moments.* Another student teacher indicated that this was really interesting.

Two student teachers found the graphs no or not really useful during the lessons simSchool and after the lessons simSchool, because we *do not use the educational terms*, power, happiness and academic, so it says nothing to me. The other student teacher indicated that you can see if it was positive or negative, but *the graphs remains fake* and that you see changes, but found it *not useful*.

Could you interpret the graphs?

Nine student teachers could interpret the graphs during the lesson simSchool, in this way you *can see how pupils feel and learn,* also the *attitudes let see how pupils learn*. The graph was clear, one student teacher mentioned that the *colour of the graph was clear and the 0 line was clear*. Another student teacher said that you could respond on it, for example by giving another task. *The clock, above the pupil, was difficult to interpret.*

One student teachers could not interpret the graphs during the lessons simSchool, because we *do not use the educational terms*, power, happiness and academic, so it says nothing to me.

One student teacher scores barely, because I *do not always understand it.*

Seven student teachers could interpret the graphs after the lessons simSchool, because you can see how the pupil was feeling. The line of the graph was clear and if it had effect, but the *explanation was in English*, it was easier when the explanation is in Dutch. Another student teacher mentioned that you could see clearly what was positive and negative and what you have to do the same next time and what you have to do different next time. Finally one student teacher noted that it was *difficult to argue why the line increase or decline* .

One student teacher could sometimes interpret the graph after the lesson simSchool, because there were *a lot of differences in line, so I wondered why is the line increasing*.

Two student teachers could not or not quite interpret the graphs, because we *do not use the educational terms*, academic, openness, conscientiousness, extroversion, agreeableness and neuroticism, so it says nothing to me. The other student teacher indicated that there were *a lot of differences in line, so I wondered why is the line increasing*.

One student teacher could barely interpret the graphs, because they do not always understand, but this is due to the *English language*.

The student teachers indicated in the questionnaire that they could give pupils questions, assignments and comments, to adjusted actions to increase pupils results. As a result, the pupils went sometimes to work, but often they do not react at all. In addition, there could be looking at the increases and decreases in the graphs and to focus on and to adapt the next lessons. Only one student teacher indicated that we do not use the educational terms, who are used in the simulation simSchool.

> *"For example, if neuroticism is high and I see that this is because I have given a pop quiz, I have no idea what this actually means" (Student teacher L, questionnaire).*

One point that a student teacher indicated in the questionnaire that should be added in a new simulation, is *to see the final graph during the lesson*. In addition four student teachers indicated in the questionnaire that there should be added that *you can observe the behaviour and respond to it, view the statistics*, you *can improve your actions* and that there should be *clear and good feedback from the graphs and gauges at the end of the lessons* in the new simulation.

4.3.7 Motivation

Student teachers appreciated that the simulation captured a nice program, is funny to work, playful and challenging. Student teachers were not critical about motivation. Student teachers made two additions for a new simulation, these concern: enjoyable to do and it should be a kind of game.

Three student teachers indicated in the questionnaire that simSchool is a *nice program* and it is *funny to work* in simSchool. This is complement by a student teacher in the focus group, who mentioned that simSchool is *playfu*l, a *challenging* and fun way in which it is offered.

> *"I think pupils are enthusiastic about it and I think that it is also challenging, so yes I would really see it as a added value. I find it quite beautiful" (Student teacher D, focus group).*

The observations showed that there are a number of student teachers who are highly motivated and they are also more involved to analyse the data and try to keep the pupils satisfied. While a few student teachers are not motivated and they are not doing well in the simulation and have at the end of the lecture not finished the lesson in simSchool, because they are busier with their mobile phone or talking about other things.

Three student teachers in the questionnaire indicated that when a new simulation is developed, that the simulation should be *enjoyable to do*, where one student teacher mentioned that it *should be a kind of game*.

4.3.8 Opportunity to provide guidance/support from the teacher training institute by fellow students and teachers

Student teachers appreciated that the simulation captured working together, the simulation was quite completed at the beginning and then it was fine to work together, opportunities for discussion, more fun, makes it more interesting, because you can deliberate your choices and making you aware about it, come to different views, can see how another would react, useful, so one could read and the other could carry out and quicker and easier to understand. Student teachers were critical about less challenging and wonder if the reflection does help. Therefore the student teachers made seven additions for a new simulation, these concern: to get instruction, before you start working in the new simulation, feedback/reflection, cooperation, more specific assignments for working together, to allocate tasks, coupled interface and the first lesson together and then alone, after the lessons compare your results.

An advantage can be seen in the questionnaire in which student teachers scored *working together* with a fellow student teacher as somewhat important to very important, this can be seen in table 4.8.

Table 4.8

How important is working together with a fellow student teacher?

	Not very important	Slightly important	Somewhat important	Important	Very important
How much?			3	7	1

Only one student teacher in the questionnaire found *the simulation quite complicated at the beginning and then it was fine to work together*. By working together, you have *opportunities for discussion* with each other what you are going to do and it also gives little *more fun* in working in the simulation. Several student teachers in the questionnaire supplement this to indicate that cooperation *makes it more interesting , because you can deliberate your choices, making you more aware about it. You can see how another would react* to a particular pupil and what impact it has on the pupils and in addition you often *come to different views*. Another student teacher in the questionnaire found working together *useful, so one could read and the other could carry out*. In addition it was indicated in the questionnaire that it was *quicker and easier to understand*, but two other student teachers indicated in the questionnaire that it was *less challenging*, because you could not choose what you want and another student teacher in the questionnaire said that working together was fine, but working alone is also no problem.

Two student teachers in the focus group *wonder if the reflection does help* a simulated simStudent.

When a new simulation is developed, one student teacher indicated in the questionnaire that he would like *to get instruction, before you start working in the new simulation*. Several student teachers in the questionnaire, focus group and interview found that *feedback/reflection* and *cooperation* should be added in a new simulation. At feedback/reflection, two student teachers in the focus group see that

you could reflect with a university teacher on the results after you have worked in the simulation and getting additional guidance for that, what you can apply in your internship. Or that a fellow student teacher is watching you when working in the simulation and after that you discuss the results together.

> *"If you have been working during lecture and you have completed the simulation, and you say I'm here already good, I have 90 out of 100, here I have 90 out of 100, there I have 80 out of 100 and right here I have 30 out of 100 and that you are looking specifically with the university teacher on how does that happened, which choices you have made and that you get extra accompanies in that" (Student teacher D, focus group).*

The observations showed that half of the student teachers worked in the first and second lesson good together and in the last lesson of simSchool all the student teachers worked well together. The cooperation as happened in the lessons simSchool, whereby two student teachers worked together in the simulation, should remain according to five student teachers in the questionnaire, of which one student teacher indicated that there should be *more specific assignments for working together*. Three other student teachers suggested for adjustment when a new simulation is developed, *to allocate tasks*, one student teacher is doing the class, the other the individuals, *coupled interface* on two computers *and the first lesson together and then alone, after the lessons compare your results.*

4.3.9 Influence on designing simulation

Student teachers and university teachers appreciated that the simulation captured practice, create the ideal learning environment and many choices in tasks, both for individual pupils and the whole class. Student teachers were critical about selected ready-made phrases, too much choice in tasks and the task is often not performed. Therefore the student teachers made 11 additions for a new simulation, these concern: type their own answers, choice of tasks, design pupil for the simulation by themselves, with different problems and needs for the pupils and in advance you fill in how the pupil is, when student teachers experiences a problem, an individual task van be connected in the simulation, than you get the maximum benefit from the learning situation, connect to the needs of the student teachers, connect to the school years, different groups, more pupils, constructive levels in school years, interaction and focused on subtasks.

An advantage is that student teachers can *practice* in the simulation (focus group).

> *"We received quite a lot of grip, but the grip we receive, as shown on pedagogy, how are you dealing with a pupil, or didactical, how do I explain something, I think you could process this nicely in a simulation. That you can practice extra, because with 2 days of internship you can practice a lot, but if you have problems with math and no pupil have questions about math, than you cannot practice this, but with a simulation you can practice this" (Student teacher C & D, focus group).*

Another advantage that university teachers in the focus group see is that you can *create the ideal learning environment* in a simulation.

> *"You can make the ideal learning environment, so you have control over the learning environment where you put the student teachers in, now you would trying to keep this control, but that succeed partly, but also partly not, and in the simulation you have the control in your own hands, because you can determine what the pupil is saying, what it looks like and what happens, so that is an advantage"* (University teacher A, focus group).

Several student teachers indicated in the questionnaire that it is unfortunate that you cannot say things by yourself to the pupils in the simulation simSchool, you can only *selected ready-made phrases*. Thereon several student teachers stated that they would like *to type their own answers* to the pupils. Another disadvantage according to student teachers in the questionnaire about the simulation simSchool is that there is *too much choice in tasks* and if you give pupils a task, *the task is often not performed*. *Choice of tasks* is also a point which another student teacher in the questionnaire would like to change when a new simulation is developed. While two other student teachers indicated in the questionnaire that it is precisely a good point of simSchool that you have *many choices in tasks, both for individual pupils and the whole class*.

Additions for a new simulation who are mentioned in the questionnaire is to *design pupil for the simulation by themselves, with different problems and needs for the pupils and in advance you fill in how the pupil is.* This is complemented by a student teacher in the focus group, to adjust the simulation by themselves when for example you encounter a problem, so you can practice with that problem. Another point for addition according to student teachers in the focus group is that the simulation should *connect to the needs of the student teachers*. During teacher training, student teachers learn to give inclusive education, but why does this not happen at the teacher training institute? So *when student teachers experienced a problem, an individual task can be connected in the simulation, than you get the maximum benefit from the learning situation*. Hereby one student teacher in the interview than sees value in the simulation if it is connected to her needs. She indicated to what extent it is possible to connect to all the needs of the student teachers, so she give a suggestion to *connect to the school years* of the student teachers. In addition, *different groups* is also an important point for the new simulation, where the student teacher can choose between substructure, middle classes and superstructure, because the substructure is different from the pupils in superstructure. One student teacher noted in the questionnaire that the *more pupils* in the classroom, the more fun. Another point of addition according to a student teacher in the interview for a new simulation are *constructive level in school years*. *Interaction* is also an important point according to one student teacher in the questionnaire, he indicated to choose more in the interaction by themselves. A final point of addition, one student teacher mentioned in the questionnaire that the simulation should be *focused on subtasks*.

4.3.10 Pedagogy of teaching and vision

Student teachers appreciated that the simulation captured distinction between the individual and the whole group and see an added value as the simulation is as extra. A University teacher was critical that the simulation is more didactical and organizational than pedagogical and interpersonal. Therefore the student teachers and university teachers made nine additions for a new simulation, these concern: should be based on the Dutch way of teaching, should be based on the Dutch/European educational vision, meaningful education, focused on one or two related competences, distinction between the individual and the whole group, helpline, theoretical sources, assignments should be added and should be based on something.

Two student teachers mentioned in the questionnaire that the *distinction between the individual and the whole group* in the simulation simSchool is good. Two other student teachers indicated in the focus group that the use of a simulation have and *added value as the simulation is as extra*, so next to the internship.

A university teacher indicated in the focus group that the *simulation is more didactical and organizational than pedagogical and interpersonal*, this is an disadvantage of a simulation.

Two student teachers indicated in the questionnaire that when a new simulation is developed, the new simulation *should be based on the Dutch way of teaching* and *should be based on the Dutch/European educational vision*. The university teachers confirmed in the focus group this by indicating that the simulation should be consistent with the educational vision.

> *"I would like if we use something like that, that there are things that happen is connected with the education where we stand for, because it indicates that we find certain reactions more or less adequate, I would like to agree with it"* (University teacher A, focus group).

One student teacher indicated in the questionnaire that the simulation can be an important learning tool, when it is created on our way of teaching. *Meaningful education* is also an important point according to a university teachers in a focus group, so the student teachers learn to look critically what they use and why they use it, this should be packaged in the simulation.

> *"I would find it interesting, it is nice that the gauges are green, but why are those gauges green, I would be happier if the student teachers could tell why the gauges are green, than that they are green"* (University teacher A, focus group).

A student teacher indicated in the questionnaire that when he would use the simulation, the simulation should be *focused on one or two related competences*. As was previously mentioned above, the *distinction between the individual and the whole group* in the simulation was good, this point should be included in the design of a new simulation. A university teacher indicated in the focus group that it is pretty when student teachers can use a *helpline* and *theoretical sources*. A helpline is to invoke parents and an internal supervisor for advice before the student teacher make a decision. Theoretical sources can be used when the student teachers go work with some kind of tasks, to see some

information about this kind of work and what the benefits are. A student teacher indicated in the focus group that literature can also be used for a study. Another point is that *assignments should be added* in the development of a new simulation according to two student teachers in the focus group, especially for steps across the barrier to use the simulation for the first time and to see an added value in this simulation. At least only one student teacher noted in the interview that the simulation *should be based on something* and not on how I give a lesson.

4.3.11 Simulation as an important learning tool

In the questionnaire for student teachers two questions were asked to what extent you think that simSchool and a new simulation (customized with suggestions and/or comments) is an important learning tool for student teachers. This showed that student teachers see a simulation as a more important learning tool, when their suggestions and comments are fed into a new simulation, see also table 4.9 and 4.10.

Table 4.9

To what extent do you think simSchool is an important learning tool for student teachers?

	Not very important	Slightly important	Somewhat important	Important	Very important
How much?	4	4	2	1	

Table 4.10

To what extent do you think a new simulation (customized with your suggestions and/or comments) is an important learning tool for student teachers?

	Not very important	Slightly important	Somewhat important	Important	Very important
How much?	2	2	3	1 3	

5. Conclusions and Reflections

Chapter 5 is organized in three sections. Section 5.1 describes the summary of the findings per sub question. Thereafter section 5.2 describes the conclusion, by answering the main research question. Section 5.3 describes the reflections on the research methodology and the results. Recommendations for practice and further research is described in section 5.4.

5.1 Summary of the findings

This study was conducted to investigate the content and pedagogical characteristics of a simulation that aims to create an effective and positive learning environment, where student teachers can acquire the necessary competence. To answer this question, there was a main question with three related sub questions. The main research questions was:

> *What are the content and pedagogical characteristics of a simulation that contribute to the acquisition of the necessary competences for student teachers to create an effective and positive learning environment in the classroom?*

To answer the main research questions, three sub questions are used:

> Sub question 1
> *Which competences are taught during teacher training and are related to positive behaviour support?*
> Sub question 2
> *What are the problems and needs of student teachers in creating an effective and positive learning environment in the classroom?*
> Sub question 3
> *What are the experiences of student teachers in a simulation?*

Section 5.1.1 to 5.1.3 presents the summary of the results according to the above mentioned sub questions.

5.1.1 Which competences are taught during teacher training and are related to positive behaviour support?

In table 4.1 in section 4.1 are the findings of this sub question summarized, to see in a glance which PBS-principles are related to the competences.

Four out of five PBS characteristics were explicitly addressed in the study guide 2012-2013 of the teacher training institute of Windesheim University of Applied Sciences, namely: (1) working school wide, (2) prevention, (3) positive approach, teaching behavioural expectations and consequences and (4) decision-making on the basis of data. Of these PBS elements, prevention and decision making on the basis of data, appear to have been almost fully addressed. Specifically these two elements of PBS comprise five/six out of seven competences. The PBS element, prevention, includes the competences, interpersonal, pedagogical, professional, organizational, collaboration with colleagues and collaboration with the environment. The other PBS element, decision making on the basis of data, includes professionally competence, organizational competence collaboration with colleagues, collaboration with the environment and reflection and development. Two other PBS elements, working

school wide and positive approach, teaching behavioural expectations and consequences, comprise three/four out of seven competences. The PBS element, working school wide, includes the competences, interpersonal, collaboration with colleagues and collaboration with the environment. The other PBS element, positive approach, teaching behavioural expectations and consequences, includes interpersonal competence, pedagogical competence, professional competence and organizational competence. For the PBS element collaboration with parents and chain partners, the study guide demonstrates relevant, but incomplete attention. For example, this element comprise two out of seven competence, interpersonal competent and collaboration with the environment.

5.1.2 What are the problems and needs of student teachers in creating an effective and positive learning environment in the classroom?

The findings of this sub question is summarized in table 5.1. In which all the problems and needs are displayed at all six research-based elements. The problems and needs student teachers and university teachers have mentioned are combined in the table. From the table can be seen that especially the student teachers and university teachers mentioned little or no needs.

Table 5.1

The problems and needs of student teachers per research-based element

Research-based elements	Problems and needs	
Rules, expectations and procedures	Problems	• Predictability • Consequent use of the rules • Determine boundaries • Different mentality and other norms and values • Flexibility • Pace and alignment
	Needs	• Guidance for distance learning how to deal with parents with different mentality and other norms and values
Disciplinary interventions	Problems	• Dare to intervene • When intervening in negative behaviour • How to intervene when negative behaviour occurs • Fulfilment of feedback they received • How to give positive feedback • How do I feel
	Needs	
Teacher-student relationship	Problems	• Tune to the group • Entering into positive relationships/building positive relationships with pupils • Should be in your genes

	Needs	•	Some other student teachers will need to get more training in this through a lecture or a workshop on how they can easily build up a relationship
Mental set	Problems	• • • • •	Determine boundaries Self-regulation Confidence to let go Pace and alignment Flexibility
	Needs		
Student's responsibility for management	Problems	• • • • •	Giving space to pupils Relying on the power of pupils Maintain control/let go Pace and alignment Consequent use of the rules
	Needs	• •	How do I set it well with pupils and how do I that together Student teachers with no experience need more guidance
Getting off to a good start	Problems	• • • • •	Preparing their own introduction Trainee roll change to teacher Authority Following and appreciating the development of the pupil How to guide the development of the pupil
	Needs		

5.1.3 What are the experiences of student teachers in a simulation?

The findings of this sub question are divided into three different categories, advantages of a simulation, disadvantages of a simulation and the characteristics for a new simulation (see table 5.2), so you can see the experience of the student teachers in the simulation simSchool. These three categories are discussed per code, (1) communication, (2) connection simulation-practice, (3) usability, clarity and understand-ability, (4) opportunity to practice and critical reflection on complex educational situations, (5) analyzing teachers and pupil behaviour by using data, (6) motivation, (7) opportunity to provide guidance/support from the teacher training institute by fellow student teachers and teachers, (8) influence on designing simulation and (9) pedagogy of teaching and vision.

Table 5.2

The advantages and disadvantages of the simulation simSchool and characteristics for a new simulation per code

	Advantages	Disadvantages	Characteristics for a new simulation
Communication	• Expressions of the pupils	• Non-verbal reactions of the pupils and teachers • Language of the software	• Expressions of the pupils • The simulation should be in Dutch • Clicking on the emotions and the attitude of the pupils • Non verbal aspect
Connection simulation – practice	• Can practice rules, procedures and expectations, disciplinary interventions, mental set, student's responsibility for management and getting off to a good start	• Connection to reality • Cannot make the reactions of the pupils • Cannot practice teacher-student relationship • Can a student teacher take into account so many factors • To what extent the complexity and the quality you need as teacher can be translated into a simulation • You are not going to take all of the simulation literally	• Should be connected with practice and reality • Realistic tasks and responses • Pupils should be quicker pick up the tasks that the student teachers give to them • Should be connected to the world of experience
Usability, clarity and understand-ability	• Good and clearly displayed • Looks good • Cartoon and graphs make it more accessible	• User interface • Difficult to satisfied one or more pupils at the same time • Practice is more informative than a simulation	• More examples and explanations • Less rigid • Be more concrete • Clearly • Nice drawing • Well extended • The simulation should have an added value
Opportunity to practice and critical reflection on complex	• Give many responses on pupils behaviour	• Trial and error • Too many differences in	• Give many responses on pupils behaviour

educational situations	• Get immediate response • Can see how many different reactions are needed within a lesson and what you need to keep running a lesson • Practice different situations • Practice without hurting real pupils • Time to make a consciously decision • Help to get accustomed • Respond on certain situations when you have problems in practice • Come from a different direction and do not have previously worked with pupils, the simulation works for them or for first year student teachers	reactions to keep running a classroom • Responses of the pupils are often the same or unexpected • Difficult to choose to the right response, because there is amount of what you wanted to say or because what you wanted to say was not there.	• Get immediate response • Practice with complex situations • Practice, after a lecture, the knowledge and make it your own • Less learning differences • Choices for responses, comprehensive responses from pupils or less responses from pupils
Analyzing teacher and pupil behaviour by using data	• Graphs are good, clear, easy to read and well-ordered • Colour of the graph was clear and the 0-line was also clear • Graphs show different levels • Behaviour can be analyzed • Can see immediately the effect of the actions • Up to the task if your action has effect • Guide well the pupil • Can see how pupils feel and learn • Could see how the pupils scored, how the pupil responded and whether it has effect for that pupil • Why pupils react at certain moments • Attitudes let see how pupils learn • Impression of the results and	• Difficult to choose the correct response • Actions have no effect • Pupils have a certain attitude and that was not always changing • You cannot see immediately if your action had effect • Do not use the educational terms • The graphs remains fake • The clock above the pupil was difficult to interpret • Do not always understand it • Not useful • Explanation was in English • Difficult to argue why the line increase or decline • A lot of differences in line, so I	• To see the final graph during the lesson • You can observe the behaviour and respond to it • View the statistics • Improve your actions • Clear and good feedback from the graphs and gauges at the end of the lessons

	• improve these results • See the decline and progress of pupils on different areas • See if tasks and responses catch on, what level they are and what they like • See clearly per element the consequences of your actions, you could see what you have to do different next time	wondered why is the line increasing.	
Motivation	• Nice program • Funny to work • Playful • Challenging		• Enjoyable to do • Should be a kind of game
Opportunity to provide guidance/support from the teacher training institute by fellow student teachers and teachers	• Working together • The simulation was quite complicated at the beginning and then it was fine to work together • Opportunities for discussion • More fun • Makes it more interesting, because you can deliberate your choices, making you more aware about it • Come to different views • Can see how another would react • Useful, so one could read and the other could carry out • Quicker and easier to understand	• Less challenging • Wonder if the reflection does help	• To get instruction, before you start working in the new simulation • Feedback/reflection • Cooperation • More specific assignments for working together • To allocate tasks • Coupled interface • The first lesson together and then alone, after the lessons compare your results
Influence on designing simulation	• Practice • Create the ideal learning environment • Many choices in tasks, both for individual pupils and the whole class	• Selected ready-made phrases • Too much choice in tasks • The task is often not performed	• Type their own answers • Choice of tasks • Design pupils for the simulation by themselves, with different problems and needs for the pupils and in advance you fill in how the pupil is

			• When student teachers experienced a problem, an individual task can be connected in the simulation, than you get the maximum benefit from the learning situation • Connect to the needs of the student teachers • Connect to the school years • Different groups • More pupils • Constructive levels in school years • Interaction • Focused on subtasks
Pedagogy of teaching and vision	• Distinction between the individual and the whole group • Added value as the simulation is as extra	• Simulation is more didactical and organizational than pedagogical and interpersonal	• Should be based on the Dutch way of teaching • Should be based on the Dutch/European educational vision • Meaningful education • Focused on one or two related competences • Distinction between the individual and the whole group • Helpline • Theoretical sources • Assignments should be added • Should be based on something

5.2 Conclusions

This study was conducted to investigated key content and pedagogical characteristics of a simulation to contribute to the acquisition of the necessary competences for student teachers to create an effective and positive learning environment. Before answering the main research questions, the three sub questions are answered.

Findings from the document analysis suggests that there are seven competences addressed in the study guide 2012-2013, namely: (1) interpersonal competence, (2) pedagogical competence, (3) professionally competence, (4) organizational competence, (5) collaboration with colleagues, (6) collaboration with the environment, and (7) reflection and development. Four PBS characteristics, working school wide, prevention, positive approach, teaching behavioural expectations and consequences and decision-making on the basis of data were explicitly addressed in the study guide. These PBS characteristics comprise three to six out of seven competences. The other PBS element collaboration with parents and chain partners receives incomplete attention, because this element comprise two out of seven competences. So, all the competences are taught during teacher training and also all competences are related to PBS, but not all PBS-principles are explicitly addressed in the seven competences.

The focus group suggest student teachers have problems with all the six research-based element of Marzano, Marzano and Pickering (2003**).** The problems suggested by student teachers and university teachers by the first research-based element, rules, expectations and procedures are difficulties with predictability, consequent use of the rules, determine boundaries, different mentality and other norms and values, flexibility and pace and alignment. The needs suggested by a student teacher is the guidance for distance learning, how to deal with parents with different mentality and other norms and values. Problems suggested by the second research-based element, disciplinary interventions are dare to intervene, when intervening in negative behaviour, how to intervene when negative behaviour occurs, fulfilment of feedback they received, how to give positive feedback and how do I feel. No need is showed here. There are practically no problems with the third research-based element, teacher-student relationships. When there are problems with this element, this can be due to tune to the group, entering into positive relationships/building positive relationships with pupils and it should be in your genes. One need mentioned is that some student teachers will need to get more training in this through a lecture or a workshop on how they can easily build up a relationship. Problems with the fourth research-based element, mental set are determine boundaries, self-regulation, confidence to let go, pace and alignment and flexibility. No need is mentioned. The problems suggested by the fifth research-based element, student's responsibility for management are giving space to pupils, relying on the power of pupils, maintain control/let go, pace and alignment and consequent use of the rules. Two needs are mentioned here, how do I set it well with pupils and how do I that together and student teachers with no experience need more guidance. The problems with the sixth and last research-based element, getting off to a good start, are preparing their own introduction, trainee roll change to teacher, authority, following and appreciating the development of the pupils and how to guide the development of the pupils. By this element, no further need is mentioned. So, student teachers have different problems and needs in creating an effective and

positive learning environment in the classroom. Not all these elements can be incorporated into a simulation, the element teacher-student relationship can not be learned in a simulation, but only in practice. Therefore blended learning is important, so student teachers can learn in practice and in the simulation.

Findings from the questionnaire, observations and focus groups suggested that student teachers and university teachers named several advantages and disadvantages about their experience in the simulation simSchool, so every student teacher and university teacher have different experiences in the simulation. The advantage of the first category, communication is the expression of the pupils. The disadvantages of the first category, communication is the non-verbal reactions of the pupils and teachers and the language of the software. The advantage of the second category, connection simulation-practice is student teachers can practice rules, procedures and expectations, disciplinary interventions, mental set, student's responsibility for management and getting off to a good start. The disadvantages of the second category, connection simulation-practice are connection to reality, cannot make the reactions of the pupils, cannot practice teacher-student relationship, can a student teacher take into account so many factors, to what extent the complexity and the quality you need as teacher can be translated into a simulation and you are not going to take all of the simulation literally. The advantages of the third category, usability, clarity and understand-ability are good and clearly displayed, looks good and the cartoons and graphs make it more accessible. The disadvantages of the third category, usability, clarity and understand-ability are user interface, difficult to satisfied one or more pupils at the same time and practice is more informative than a simulation. The advantages of the fourth category, opportunity to practice and critical reflection on complex education situations are give many responses on pupils behaviour, get immediate response, can see how many different reactions are needed within a lesson and what you need to keep running a lesson, practice different situations, practice without hurting real pupils, time to make a consciously decision, help to get accustomed, respond on certain situations when you have problems in practice and come from a different direction and do not have previously worked with pupils, the simulation work for them or for first year student teachers. The disadvantages of the fourth category, opportunity to practice and critical reflection on complex education situations are trial and error, too many differences in reactions to keep running a classroom, responses of the pupils are often the same or unexpected and difficult to choose to the right response, because there is amount of what you wanted to say or because what you wanted to say was not there. The advantages of the fifth category, analyzing teacher and pupil behaviour by using data are graphs are good, clear, easy to read and well-ordered, colour of the graph was clear and the 0-line was also clear, graphs show different levels, behaviour can be analyzed and can see immediately the effect of the actions. It was up to the task if your action has effect, guide well the pupil, can see how pupils feel and learn, could see how the pupils scored, how the pupil responded and whether it has effect for that pupil, why pupils react at certain moments, attitudes let see how pupils learn, impression of the results and improve these results and see the decline and progress of pupils on different areas. In addition see if tasks and responses catch on, what level they are and what they like and see clearly per element the consequences of your actions, you could see what you have to do different next time. The disadvantages of the fifth category, analyzing teacher and

pupil behaviour by using data are difficult to choose the correct response and actions have no effect. Pupils have a certain attitude and that was not always changing, you cannot see immediately if your action had effect, do not use the educational terms, the graphs remains fake, the clock above the pupil was difficult to interpret, do not always understand it, not useful, explanation was in English, difficult to argue why the line increase or decline and a lot of differences in line, so I wondered why is the line increasing. The advantages of the sixth category, motivation are nice program, funny to work, playful and challenging. There are no disadvantages for the sixth category, motivation. The advantages of the seventh category, opportunity to provide guidance/support from the teacher training institute by fellow student teachers and teachers are working together and the simulation was quite complicated at the beginning and then it was fine to work together. Opportunities for discussion, more fun, makes it more interesting, because you can deliberate your choices, making you more aware about it, come to different views, can see how another would react, useful, so one could read and the other could carry out and quicker and easier to understand. The disadvantages of the seventh category, opportunity to provide guidance/support from the teacher training institute by fellow student teachers and teachers are less challenging and wonder if the reflection does help. The advantages of the eight category, influence on designing simulation are practice, create the ideal learning environment and many choices in tasks, both for individual pupils and the whole class. The disadvantages of the eight category, influence on designing simulation are selected ready-made phrases, too much choice in tasks and the task is often not performed. The advantages of the ninth and last category pedagogy of teaching and vision are distinction between the individual and the whole group and added value as the simulation is extra. The disadvantage of the ninth and last category, pedagogy of teaching and vision is simulation is more didactical and organization than pedagogical and interpersonal. So, student teachers and university teachers have different positive and negative experiences in a simulation.

To conclude, the study started with the main research question about the content and pedagogical characteristic of a simulation that contribute to the acquisition of the necessary competences for student teachers to create an effective and positive learning environment in the classroom . The study concludes that the simulation should meet certain characteristics. Several characteristics were appointed according to student teachers and university teachers. The characteristics are all subdivided into eight characteristics, mentioned in the conceptual framework in section 2.4, (1) personalized, (2) motivating, (3) resembling reality, (4) complexity of reality, (5) cooperation, (6) reflection, (7) levels and, (8) blended learning, see table 5.3. The first characteristic is personalized. Student teachers would like to see that the simulation is responsive to the needs of themselves, so the simulation is connected to their own needs and when student teachers experience a problem, an individual task can be connected in the simulation. In addition the designing of a pupils in the simulation is also mentioned, the student teacher can fill in by themselves how the pupil is. Assignments should also be added to step across the barriers to use the simulation for the first time. The second characteristic is motivating. The simulation have to be enjoyable, less rigid, more concrete, clearly, well extended, a kind of game to motivate the student teacher to work into the simulation. To motivate the student teachers the simulation could give some instruction before the student teachers going to work in the simulation, give more example and the drawing should be nice.

The third characteristic is resembling reality. The simulation should be connected with practice and reality, including realistic tasks and responses and non-verbal aspect. In addition the pupils in the simulation should be quicker pick up the tasks that students teachers give to them, can click on the emotions and attitude of the pupils and expressions of the pupils. Give many responses on pupils behaviour, less learning differences, making choices for responses, comprehensive responses from pupils or less responses from pupils, type their own answers, more pupils, interaction, focused on subtasks, distinction between the individual and the whole group, should be based on something and should be connected to the world of experience. The fourth characteristic complexity of reality. The simulation should be based on the Dutch way of teaching and on the Dutch/European educational vision. In addition meaningful education is important for the simulation, so student teachers look critically on what and why they use it. The simulation should also based on one or two related competences. The fifth characteristic is cooperation. Cooperation should be added when a new simulation is developed. In addition, specific assignments for working together, to allocate tasks, coupled interface and compare the results of the lesson in the simulation with a fellow student teacher. The sixth characteristic reflection. Feedback and reflection should be added in a new simulation, just like, see the final graph during the lesson in the simulation, observe the behaviour and respond to it, view the statistics, improve your actions and clear and good feedback from the graphs and gauges. The seventh characteristic is levels. The simulation could be in different groups, so the student teachers could choose between substructure, middles classes and superstructure or/and in different constructive levels in school years. Complex situations could also be added, because not all the complex situations could be developed during the internship, due to not find the complex situations in the internship. The eight characteristic blended learning. The simulation could be an added value, an helpline and theoretical sources which can be used by making decisions. In addition, the simulation could be used for practice the knowledge and make it your own, after a lecture. These characteristics can be seen as the content characteristics of a simulation. The pedagogical characteristics consists of the elements of PBS, (1) working school wide, (2) prevention, (3) positive approach, teaching behavioural expectations and consequences, (4) decision-making on the basis of data and (5) collaboration with parents and chain partners. PBS can be used as a possible framework to develop and skilled the six research-based elements of Marzano, Marzano and Pickering (2003) and all the PBS elements comprise the competences of the teacher training institute, but not all PBS-principles are explicitly addressed in the seven competences.

For a clear displaying of the results, the same model is used as in chapter 2.6 'theoretical framework and its application to the current study'. The model in this chapter is further complemented with the data emerged from the focus groups, interview, questionnaire and observations (Figure 5.1).

Table 5.3

The characteristics divided into the eight categories

Personalized	Motivating	Resembling reality	Complexity of reality	Cooperation	Reflection	Levels	Blended learning
Assignments	Enjoyable	Connected with practice and reality	Based on Dutch way of teaching	Cooperation	Feedback/Reflection	Complex situations	Theoretical sources
Individual task	More examples/ explanations	Realistic tasks and responses	Dutch	Specific assignment for working together	Get immediate response	Different groups	Practice, after a lecture, the knowledge and make it your own
Choice of task	Less rigid	Give many responses on pupils behaviour	Meaningful education	Coupled interface	Final graph during lesson	Levels in school year	Added value
Connect to the needs	More concrete	Distinction between individual/group	Based on Dutch/European educational vision	Compare results	Observe/respond to behaviour		Helpline
Design own pupils	Clearly	Expressions of the pupils	Focused on 1/2 related competences	Allocate tasks	View statistics		
	Nice drawing	Non-verbal aspect	Connect to school year		Improve your actions		
	Well extended	Quicker pick up the tasks			Clear/good feedback graphs		
	Kind of game	Connected to the world of					

		experience
	Instruction	Less learning differences
		Based on something
		Type their own answers
		More pupils
		Clicking on emotions and attitude
		Interaction
		Responses

PBS environment

Collaboration with parents and chain partners

Working School Wide

Decision-making on the basis of data

Prevention

Simulation

- Personalized
- Motivating
- Resembling reality
- Complexity of reality
- Cooperation
- Reflection
- Levels
- Blended learning

Positive and effective learning environment

Mental set

Teacher-student relationship

Getting off to a good start

- Rules, expectations and procedures
- Disciplinary interventions
- Student's responsibility for management

- Determine boundaries
- Self-regulation
- Maintain control/let go
- Confidence to let go
- Pace and alignment
- Flexibility

- Student teachers can do this pretty good
- No problems
- It should be in your genes
- Entering into positive relationships/building positive relationships with pupils

- Preparing their own introduction
- Trainee roll change to teacher
- Authority
- Following and appreciating the development of the pupil
- How to guide the development of the pupil

- Predictability
- Consequent use of the rules
- Determine boundaries
- Different mentality and other norms and values
- Flexibility
- Pace and alignment

- Dare to intervene
- When intervening in negative behaviour
- How to intervene when negative behaviour occurs
- Fulfilment of feedback they received
- How to give positive feedback
- How do I feel

- Giving space to pupils
- Relying on the power of pupils
- Maintain control/let go
- Pace and alignment

Positive approach, effective rules, teaching behavioural expectations and consequences

Figure 5.1: The problems of the student teachers and the characteristics of the simulation

5.3 Reflections on the research methodology and results

This section shows the reflection on the research methodology and the reflection on the results of this study. Preceding the reflection, the results of this study are above expectations, even though there are plenty considerations for this study.

5.3.1 Reflection on the research methodology

This section represents the reflection of the methodology, including the reflection on the design, instruments and data collection.

5.3.1.1 Reflection on the design

This preliminary study used the analysis phase of Educational Design Research of McKenney and Reeves (2012). This phase consist of three consecutive activities who are all three used in this study, (1) initial orientation, (2) literature review, and (3) field-based investigation (McKenney & Reeves, 2012). The last consecutive activity consist of different methods that can be used during a study. In this study use is made of document analysis, focus group, questionnaire and observation. This model is well suited to this study, because all the three consecutive activities are used and use is made of different methods for answering the sub questions and ultimately answering the main research question.

5.3.1.2 Reflection on the instruments

During this study four instruments are used, document analysis, focus groups, questionnaire and observations. The document analysis was clearly prepared before execution, the principles of PBS and seven competences of teacher education are taken from the literature and a document received from an university teacher of Windesheim University. This was a good way of doing the document analysis.

The focus group was based on the book of Vaughn, Shay Schumm and Sinagub (1996). After the moderators guide of the focus group was prepared, the moderators guide was discussed with an expert in focus groups, this feedback was used for adapting and improving the moderators guide. This was a good way, because the moderator's guide was first drawn up on the basis of the book of Vaughn, Shay Schumm and Sinagub (1996) and later discussed by an experienced person. Previously the idea was to take two focus groups with university teachers and student teachers and no personal interview. One student teacher had little time, so an interview was planned with her, through the short time period the moderator's guide for the focus group was used for the interview, so was it better to prepare the interview separately from the focus group or was this a good way?

The questionnaire was based on the simSchool Feedback Survey from Knezek and Christensen and is adjusted on the basis of the literature and the feedback from the first and second supervisor. After the adjustments the questionnaire was carried out directly, so the questionnaire was not field tested and readjusted, this is due to the short time frame of this study. It would have been better to field test the questionnaire and adjust it again, this is conducive of the questionnaire.

The observations were performed during the lessons simSchool and after the lessons simSchool, because everything was recorded. Previously no observation tool was formed and therefore not field tested, so some important information might be missing, because there is not observed on a special manner and looking at special points when the student teachers were working in the simulation. The simulation that was used during the lessons was simSchool, this is an English-language simulation, what can be seen as a disadvantage, because some student teachers have difficulties with English. In addition, there is made use of one type of simulation, while there are some other types of simulations. No prior research has been done which simulation could be best applied in this setting.

5.3.1.3 Reflection on the data

Just like the reflection on the instruments, the data of the four instruments used in the study were also discussed here. The data of the document analysis was clear, because all the information of PBS could be used from the conceptual framework and the information about the competences stood in a document obtained from a university teacher of the teacher training institute of Windesheim University in Zwolle.

The focus group was based on the book of Vaughn, Shay Schumm and Sinagub (1996). According to Vaughn, Shay Schumm and Sinagub (1996) "focus group interviews are not for the novice of inexperienced researcher" (p. 150). This is a shortcoming, because this was the first time to take off a focus group. Thus it was difficult to intervene when the student teachers and the university teachers wonder away from the topic. In addition, the data from the focus group cannot be generalized to a larger group, because the purpose of the focus group is to report the views of the respondents (Vaughn, Shay Schumm and Sinagub, 1996). Therefore, in this study all views of the student teachers and university teachers are described and cannot be generalized, it was otherwise not possible to generalize the points, due to the small numbers of participants. In addition one other point according to Vaughn Shay Schumm and Sinagub (1996) "one of the most common mistakes of novice focus group moderators is to adhere tenaciously to predetermined questions" (p. 151). Due to the moderators guide the questions would asked to the student teachers and university teachers were clear and used during the focus group, therefore it was sometimes difficult to deviate from these questions. Sometimes the focus was on the proposed questions, which was forgotten to ask further, so some information is missing in this study. In addition, from the student teachers who participated in the focus group the background is not known, so it cannot be said that this are the real problems and needs of the student teachers. Between the student teachers and the university teachers less commonality is seen between the problems and needs.

The data of the questionnaire was useful, because all the student teachers fill in the questionnaire. Some student teachers did not reply all questions, because there was no checking during the intake of the questionnaires who were completed, so some answers are missing, this relates to approximately two missing answers. Because of the questionnaire was not field tested and readjusted, there were several overlapping questions in the questionnaire. This could be avoided if the questionnaire was first of all field tested and then readjusted.

The observation tool was performed during the lessons simSchool and also after the lesson simSchool. Therefore this leads to some loss of data, because not all student teachers could be seen on the camera and could not see the screen of the computer, where the student teachers clicked on. In addition, use is not made of an instrument, so some information was not seen, because there were no specific observation points.

5.3.2 Reflection on the results

This section discuss the reflection on the results in this study. It is divided in three headings, problems of positive and effective learning environment in the classroom, PBS and simulation.

5.3.2.1 Positive and effective learning environment in the classroom

As the results showed, student teachers have different problems with the six research-based elements of Marzano, Marzano and Pickering (2003).. From the results it is clear that both the student teachers and the university teachers indicated that student teachers have little or no problems with the teacher-student relationship. In addition, student teachers and university teachers indicated a few similarities in problems looking at the other research-based elements, such as problems with the consequences of the rules, problems with the pace and alignment, problems with giving positive and negative feedback, problems with giving space to pupils and problems with relying on the power of the pupils. This results cannot be linked to the literature, because the conceptual framework describes only the six research-based elements of Marzano, Marzano and Pickering (2003) and the general problems beginning teachers experience. Therefore it is an interesting point to look at the problems and needs student teachers experience according to the research-based elements of Marzano, Marzano and Pickering (2003). In the conceptual framework it has become apparent that beginning teachers have most difficulties with classroom management and classroom discipline (Kent, 2000; Romano, 2007; Veenman, 1984). Thus it is confirmed that beginning teachers experience most problems with creating a positive and effective learning environment in the classroom. In addition, during the focus group the focus was on the problems student teachers experience and the focus was less to the needs of the student teachers. In the focus group, student teachers and university teachers named only the following needs, also mentioned in Table 5.1, (1) guidance for distance learning how to deal with parents with different mentality and other norms and values, (2) some other student teachers will need to get more training in this through a lecture or a workshop on how they can easily build up a relationship, (3) how do I set it well with pupils and how do I that together and (4) student teachers with no experience need more guidance. As indicated in figure 2.2. in the conceptual framework, teachers who have just graduated have zero efficacy on teaching strategies, classroom management and student engagement. This does not correspond to the picture that the student teachers in the focus group sketches. Therefore the questions are, are the student teachers aware of the complexity in the classroom or is this figure 2.2 not applicable to the just graduated teachers and student teachers in the Netherlands? Therefore it is important to investigate the actual needs of the student teachers with regard to the six research-based elements of Marzano, Marzano and Pickering (2003). A simulation can be used to learn these six research based elements, but not all the element

can be practiced in a simulation. Therefore a characteristic for a new simulation is blended learning, so student teachers can learn the teacher-student relationship in practice and other elements can be learned in practice and in a simulation. A simulation should not replace the practical experience, but should be developed to prepare student teachers better for the real classroom.

5.3.2.2 Positive behaviour Support

As the results show, all the PBS-principles are related to the seven competences of the teacher training institute Windesheim, but not all in the same degree. This was confirmed by the university teachers in the focus group. The PBS-principle working school wide is related to interpersonal competence, because school-wide expectations are formulated (Goei et al., 2010/2011). These PBS-principle is also related to collaboration with colleagues and collaboration with the environment, because a PBS team consist of a team that is formed with the school director, representatives of teachers, support staff and parents (Goei et al., 2010/2011). The PBS-principle prevention is related to six competences, the first one is interpersonal competence, because according to Goei et al. (2013) "the interventions across the three tiers all have a relationship with the expected and preferred behaviour, building a predictable and sustainable learning environment" (p. 8). The second is pedagogical competence, because the intervention could be effective educational support, social skills training, effective classroom management, teaching expectations in terms of behaviour, agreements about active supervision and monitoring, positive reinforcements, clear rules and related actions and decision-making on the basis of data (Goei et al., 2010/2011; Hieneman, Dunlap, & Kindcaid, 2005). The third is professionally competence, because every tier of the prevention model is associated with interventions (Goei et al., 2010/2011). The fourth is organizational competence, because teachers have to teach expectations in terms of behaviour (Goei et al., 2010/2011; Hieneman, Dunlap, & Kincaid, 2005). The fifth and last competence are collaboration with colleagues and collaboration with the environment, because according to Sugai and Horner (2006) "special educators, school psychologists, counsellors and behavior interventionists must have specialized competence to develop team-based and comprehensive (i.e. wraparound, person-centred) behaviour intervention plans" (p. 247). The PBS-principle positive approach, teaching behavioural expectations and consequences are related to four competences. The first competence is interpersonal, because students have to choose their own rewards in consultation with the teacher (Marzano, Marzano, & Pickering, 2003). The second competence is pedagogical, because the attention to desired behaviour on a PBS school is four times greater than the attention to correcting undesirable behaviour, so 4:1 (Goei et al., 2010/2011). The third competence is professional, because teachers teach behavioural expectations to the students (Sugai & Lewis, 1996 as cited in Warren et al., 2006) The last competence is organizational competence, because it is important to create a predictable environment that is focused on the success of the pupils in the classroom (Sugai, Todd & Lewis-Palmer, 2005). The PBS-principle decision-making on the basis of data is related to five competences. The first competence is professionally competence, because with the obtained data teachers can change the learning environment, by removing environmental factors that influence inappropriate behaviour (Ruef et al., 1998). The second competence is organizational competence, because with the obtained data

teachers can devise a plan and perform an intervention (Goei et al., 2010/2011). These PBS-principle is also related to collaboration with colleagues and collaboration with the environment, because new data can be collected on the basis of interviewing teachers, parents and other chain partners or observations and conducting observations (Hieneman, Dunlap, & Kincaid, 2005). The last competence is reflection and development, because this competence is at Windesheim University the inquisitive attitude, in which pre-service teachers look at the students results and decide how to proceed. The last PBS-principle collaboration with parents and chain partners is related to the competences, interpersonal and collaboration with the environment. The first competence is interpersonal, because, parental involvement has a positive effect on pupils behaviour and pupils provide better academic performance (Epstein, 2001; Fan & Chen, 2001; Henderson & Mapp, 2002 as cited in Goei et al., 2013). This principle is also related to collaboration with the environment, because pupils deal with teachers, parents, administrators and chain partners (Goei et al., 2010/2011; Hieneman, Dunlap, & Kindcaid, 2005). A remarkable point is that two competences of the teacher training institute, pedagogical competence and reflection and development, recur in only one or two PBS-principles. Thus now raises the questions of whether all the competences are related to the PBS-principles? Another interesting point is that beforehand, it was decided to ask only the university teachers about PBS, because student teachers probably do not know the term PBS and therefore much time would be lost by explaining PBS. In retrospect, the student teachers know PBS, according to the university teachers, but the focus group with the university teachers was after the focus groups with the student teachers. As a result a one-sided picture is sketched, only by the university teachers. To get a clearer view, it was better to included the student teachers. In addition, it is made clear throughout the whole study and especially in the conceptual framework that PBS is a handhold for learning the six research-based elements of Marzano, Marzano and Pickering (2003). During this study it is not investigated whether this is actually the case, therefore it is important to look during further research if PBS is a real handhold for learning the six research-based elements in practice.

5.3.2.3 Simulation

As the results shows, there were many advantages, disadvantages and characteristics for a new simulation mentioned. First of all in the conceptual framework, the advantages and disadvantages are mentioned. At the end of the conceptual framework, the main characteristics of a simulation are summarized in eight characteristics. These characteristics have been summarized, because the main research questions is about characteristics of a simulation. These are eight remarkable point, because these has contributed to a clear and concise answering of the main research question. During the writing of section 4.3, it was remarkable that student teachers and university teachers have different experiences in the simulation. During the focus groups the student teacher and the university teachers are asked about the advantages, disadvantages and characteristics for a new simulation. Here is more commonly asked what the opinion of the student teachers and the university teachers is on the use of a simulation during teacher training. In order to get a clearer view, it was better to ask their opinion on the use of a simulation during teacher training which responds to the problems and needs student teachers experience in creating an positive and effective learning environment in the

classroom. In addition the student teachers of the focus group had no experience in simSchool, so they have given feedback on the basis of their own knowledge and the images they had seen of the simulation simSchool. Another remarkable point is that use is made of the simulation simSchool, so the student teachers have only worked in one simulation and their answers in the questionnaire are based on their experiences in this simulation. Therefore it is good to note that the results are based on the simulation simSchool, the results can be different when student teachers worked in another simulation. In addition, it was notable that a number of points student teachers and university teachers indicated by characteristic for a new simulation are also mentioned in the conceptual framework. Such as the student teachers indicated that they wanted to see the graph during the simulation and the conceptual framework states: Suggestions to improve simSchool are resolving technical issues and the mechanics of the software, such as seeing the performance reports of every simStudent during the simulation (Bush et al., 2012). Another point student teachers and university teachers indicated that they wanted to see complex situations in a new simulation and the conceptual framework states: Student teachers can practice in the simulation simSchool with a much variety of pupils than during their internship in the classroom, therefore student teachers obtain better experiences (McPherson et al., 2011). As also mentioned by the six research-based element, not everything can be learned in a simulation. Such as the face expression cannot be practiced in a simulation, but only in the real classroom. Therefore it is important to look again at the characteristics to see which characteristics can be implemented in the simulation and what can only be practice in the real classroom and what can be learned in both the simulation and the real classroom, so blended learning.

5.4 Recommendations

The current study showed that student teachers experience several problems per research-based element and indicated little needs for more guidance into these points. In addition, the student teachers and the university teachers mentioned several characteristics that should be included in the simulation. From this it seems worthwhile to do more research into the use of a simulation during teacher training. Based on the results and the conclusion the following recommendations are made for further research:

- This research was focused on the analysis phase of Educational Design Research (McKenney & Reeves, 2012). Further research could focus on the other phases of Education Design Research, Design/Construction, Evaluation/Reflection and the implementation.
- Different characteristics for a new simulation are applied in the section conclusion, see table 5.3. These characteristics are not evaluated with the respondents. Therefore a recommendation is to investigate the usability of these characteristics, by making use of a formative evaluation.
- During this study 11 student teachers followed three lessons simSchool. A recommendation for further research is to use a pre- and post test, in which the student teachers work in a simulation for a longer period and more, to determine of the simulation has a positive effect on

practicing the problems that student teachers experienced, according to the six research-based elements of Marzano, Marzano and Pickering (2003).

- This was a preliminary study. From this study Windesheim university would maybe use this study to see if there are opportunities to develop a new simulation. A recommendation is to look at the possibilities of simSchool or if another simulation can connect to the points student teachers and university teachers mentioned in this study, because the development of a whole new simulation cost a lot of time and years.

- During this study only third year student teachers and one fourth year student teacher are involved. A recommendation is to involve beginning teachers and fourth year student teachers.

- An advisory rapport could be written, wherein the important guidelines are described which the simulation should need, to provide adequate support to the student teachers and novice teachers. Based on this advisory rapport, it could be examined to what extent simSchool need to be modified and what the possibilities are for developing a new simulation.

- During this study it is not investigated whether this is actually the case, therefore it is important to look during further research if PBS is a real handhold for learning the six research-based elements in practice.

- This study can be connected to a greater study, to see if the results are similar or different.

5.5 Closing remarks

This study set out to do a part of a small scale pilot project at the teacher training institute of Windesheim University of Apllied Sciences in the Netherland, with the purpose to identify the content and pedagogical characteristics of a simulation that contribute to the acquisition of the necessary competences for student teachers for creating a positive and effective learning environment in the classroom.

This study has shown that student teachers have several and different problems with creating a positive and effective learning environment in the classroom and that there are nine important characteristics for creating a simulation. Because this is a small scale project, little is studied and found out about using simulation in teacher training and therefore there need to be a larger project, because learning through computer is increasingly rising, so this is an important topic.

6. References

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7. Appendices

Appendix1. Method conceptual framework

Appendix 2. Focus group University teacher

Appendix 3. Focus group student teachers

Appendix 4. The simSchool Feedback Survey from Knezek and Christensen

Appendix 5. Coding Scheme

Appendix 6. Calculating Cohen's Kappa focus group

Appendix 7. Questionnaire lesson simSchool

Appendix 8. Coding questionnaire lesson simSchool

Appendix1. Method conceptual framework

During this literature study, articles received from Margreet van Oudheusden and Joke Voogt were used and three databases were used to search for literature. Overall criteria for the literature were peer-reviewed, written in English or Dutch and books or articles written in 2000 or later. An exception was made on four articles who appeared before 2000, because these were very useful.

At the beginning of the literature study seventy articles or books were received from Margreet van Oudheusden and served as the starting point for the literature study. The articles were selected on relevance on the basis of the abstracts and scanning the entire article. During the selection of relevant articles, the three criteria described above were used and the following keywords and related terms were used: 'positive and effective learning environment', 'positive behavior support', 'pre-service teachers' and 'simulation'. After these selection, 13 articles or books were selected for writing the literature study. While reading these articles there were cited quotes from other authors that were suitable in this literature review. On the basis of the reference list, the related articles were sought. Therefore the reference list of the relevant articles were used as additional sources. In total, ten articles were selected after using the reference list. At the end of this process, the reading of the abstracts and scanning the entire article on the basis of several criteria, using the reference list from relevant articles as additional sources and find out during reading that the article was not in line with this literature study. At the end of this process twenty-two articles selected for writing this literature study.

Not only articles or books were received from Margreet van Oudheusden, but also six articles were obtained from Joke Voogt. These articles were selected in the same way as described above. During reading these three articles the reference list were used as additional sources. In total seven articles were selected to use during this literature study.

To select more articles for this literature study, databases were used. Eric, Scopus and Web of Science were used to search for relevant articles. First of all Thesaurus from Eric was used to describe a subject area. During this literature study the following key words were used: 'pre-service teacher education',' teacher education', 'pre-service teachers', 'simulated environment', 'role playing', 'simulation', 'computer simulation', 'educational games', 'positive reinforcement', 'classroom environment', 'teacher student relationship' and 'problems'. These terms were combined with each other and these key words were also used in the other two databases. To reduce the selection of articles, the articles were selected on the criteria peer-reviewed, written in English or Dutch and articles written in 2000 or later. Thereafter the title of the article and the abstracts are read and relevant articles were stored. In total, twenty articles were selected after the selection of relevant articles. While reading this articles there were cited quotes from other authors that were suitable in this literature review. On the basis of the reference list, the related article were sought. Therefore the reference list of the relevant articles were used as additional sources. At the end of this process sixteen articles were selected for this literature study.

In total, fifty-five articles were used during the writing of this literature study.

Appendix 2. Focus group University teacher

'The moderatos's guide':

1. **Introductie**
   a) Welkom
   Welkom en bedankt voor het komen naar deze focusgroep. Allereerst stel ik mezelf voor, waarna ieder zichzelf mag voorstellen. Deze focusgroep wil ik graag opnemen, geeft ieder van u hier toestemming voor? Ieder van jullie is geselecteerd om deel te nemen aan deze focusgroep, omdat uw inbreng belangrijk is voor mijn onderzoek. Ik weet dat u het erg druk heeft en daarom stel ik het zeer op prijs dat u deelneemt aan mijn onderzoek. Deze focusgroep is geen test, noch mag deze focusgroep worden gezien als een reeks vragen met goede en foute antwoorden. Vergeet vooral niet, ik ben geïnteresseerd in wat u denkt en wat u voelt. Ik wil graag uw mening weten over bepaalde onderwerpen. Soms bent u het eens of niet mee eens met het gegeven wat een ander zegt, ik hoor graag wanneer u het wel of niet eens bent met het gene wat een ander zegt. Hierbij is het belangrijk dat de deelnemers elkaars antwoorden niet "kopiëren", maar antwoorden wat voor hun klopt ook al is het anders dan wat de andere deelnemers aangeven.

   b) Doel van het interview
   Het doel van deze focusgroep is om een duidelijk beeld te krijgen van de problemen en behoeften die docenten in opleiding ervaren in het inrichten van een positieve en effectieve leeromgeving. Het gaat in de praktijk niet alleen om de problemen die docenten in opleiding ervaren met betrekking tot de didactiek, maar ook om het inrichten van de leeromgeving en hoe hier in gehandeld wordt. Een framework hiervoor is PBS. En in hoeverre een simulatie een krachtig leermiddel kan zijn voor het inrichten van een effectieve en positieve leeromgeving.

   c) Richtlijnen voor het volgen van het interview
   Gedurende de focusgroep zijn er een paar richtlijnen, ik hoop dat u die wilt volgen. Ten eerste, u hoeft niet in een bepaalde volgorde te spreken, als u iets te zeggen heeft dan mag dat. Ten tweede, als iemand anders aan het woord is mag u er niet doorheen praten, soms is het verleidelijk om in te springen wanneer iemand aan het woord is, maar ik vraag u om dat niet te doen. Ten derde, vergeet niet dat er meerdere mensen deelnemen aan deze focusgroep en ik graag iedereen wil horen. Ten vierde, u hoeft niet in te stemmen met de problemen en behoeften die andere aanhalen/ervaren, maar u moet wel uw eigen problemen en behoeften/ervaringen verklaren, zonder negatieve opmerking. Tot slot, doordat ik een beperkte tijd heb voor het afnemen van de focusgroep (1 uur), kan het soms zijn dat ik een discussie stop om door te gaan met het volgende punt. Heeft u verder nog vragen?........ Oké, dan gaan we beginnen.

2. **Warming up**
   a) Zet de toon en stel de deelnemers op hun gemak
   U bent een docent aan Windesheim, kunt u mij in het kort vertellen wat voor functie u heeft binnen de Pabo?

3. **Verduidelijking van de termen**
   a) Bepaal de kennisbasis van kernbegrippen door vragen
   b) Zorg voor definities voor de belangrijkste termen.
   c) Termen die worden gebruikt gedurende deze focusgroep zijn effectieve en positieve leeromgeving, positive behavior support (PBS) en simulatie. De term effectieve en positieve leeromgeving verwijst naar zes op onderzoek gebaseerde elementen (1) opstellen van regels, verwachtingen en procedures (verwachtingen zijn de verwachtingen van de school en hebben betrekking op algemene normen van gedrag, bijv. respectvol, verantwoordelijk en coöperatief zijn, de regels moeten aansluiten bij de verwachtingen en de procedures. De procedures gaat over een manier hoe iets verloopt, dus de procedures moeten aan de student worden uitgelegd, voorgedaan, geoefend en de studenten moeten hier feedback op krijgen van de docent), (2) disciplinaire interventies (refereert naar de interventies die gebruikt kunnen worden wanneer de studenten de regels, verwachtingen en procedures niet opvolgen), (3) docent - student relatie (relatie tussen studenten en docenten), (4) mentale set (hierbij gaat het om de manier hoe een docent denkt, communiceert en zich gedraagt in de klas), (5) verantwoordelijkheid van studenten voor

management (hieronder vallen zelf discipline, zelf management, zelf regulering, zelfcontrole, sociale vaardigheden, keuze van studenten met betrekking tot regels, consequenties, met als doel het vergroten van de afhankelijkheid, productiviteit en de integratie van de studenten), (6) goede start (aan het begin van het schooljaar een goede start maken). De term PBS is een schoolbrede aanpak die vooral in Amerika veel wordt toegepast. PBS is gericht op het versterken van positief gedrag, het verminderen van storend gedrag, het voorkomen van het academische falen door het inrichten van een positieve en sociale omgeving, het leren van vaardigheden en het waarderen van positief gedrag. PBS is een framework dat gericht is op vijf pijlers: (1) schoolbreed werken (het is een schoolbrede aanpak), (2) preventief (het model is gebaseerd op een piramide met drie lagen, er worden drie lagen in onderscheiden, in iedere laag worden gerichte interventies ontwikkeld en uitgevoerd op 3 niveaus, voor alle studenten, voor studenten die enige mate van risicogedrag vertonen en voor studeren die ernstig probleemgedrag vertonen), (3) positieve benadering, effectieve regels, verwachtingen onderwijzen en consequenties (het versterken van gewenst gedrag is een krachtig middel om gedragsverandering tot stand te brengen, regels geven de verwachtingen weer en de consequenties kunnen zowel positief als negatief zijn), (4) besluitvorming op basis van data (planmatig handelen en het maken van keuzes op basis van data), (5) samenwerking met ouders en ketenpartners (alle betrokkenen rondom de student samen laten werken). De term simulatie is het nabootsen van de werkelijkheid met behulp van een computerprogramma, het is een omgeving voor onderwijsdoeleinden en entertainment doeleinden. Zijn de begrippen voor iedereen duidelijk?

4. **Makkelijke en niet bedreigende vragen en moeilijkere vragen**
   a) De eerste vragen moeten algemeen zijn en minder bedreigend
   b) De moeilijke en persoonlijke vragen moeten hier worden vastgelegd
      Effectieve en positieve leeromgeving (punten van Marzano hier benoemen)
      - Herkent u deze punten?
      - Wat vinden studenten in opleiding hier makkelijk aan?
      - Wat vinden studenten in opleiding hier moeilijk aan?
      - Hoe komt het dat studenten in opleiding daar geen moeite mee hebben?
      - Hoe gaan studenten in opleiding hiermee om? Hoe pakken studenten in opleiding dit aan?
      - Hoe leren of ontwikkelen studenten in opleiding dit?
      - Wat kunnen studenten in opleiding leren binnen de Pabo om hier vaardiger in te worden?
      - Welke punten vindt u nog meer bij een effectieve en positieve leeromgeving passen?
      - Wat vinden docenten in opleiding hier volgens u makkelijk aan?
      - Wat vinden docenten in opleiding hier volgens u moeilijk aan?
      - Wat willen docenten in opleiding volgens u leren om hier vaardiger in te worden?
      - Hoe kan dit volgens u binnen de Pabo worden geleerd?

De zes 'evidence-based practices' van Marzano achter de hand houden en in situaties aanhalen, als nog niet alle punten van Marzano aan de beurt zijn geweest.
- Regels, procedures en verwachting
  Stel een docent in opleiding komt in de volgende situatie terecht: Een docent in opleiding heeft in de klas een student zitten die het bloed onder de nagels vandaan haalt, hoe zou een docent in opleiding dat gedrag aanpakken?
- Disciplinaire interventies
  Stel een docent in opleiding komt in de volgende situatie terecht: Een docent in opleiding heeft een klas waarin een student de regels niet netjes opvolgt, hoe gaat een docent in opleiding hiermee om?
- Docent-student relatie
  Dit jaar zijn de docenten in opleiding gestart met een nieuwe stage in een nieuwe klas en waarschijnlijk ook op een nieuwe school, hoe pakken docenten in opleiding het aan om een goede docent-student relatie op te bouwen?
- Mentale set

Stel een docent in opleiding komt in de volgende situatie terecht: Een docent in opleiding laat de studenten in tweetallen werken, na een poos merkt de docent in opleiding op dat een tweetal studenten ongewenst gedrag vertonen, hoe gaat de docent in opleiding hiermee om?
- Verantwoordelijkheid van de studenten voor management
Stel een docent in opleiding komt in de volgende situatie terecht: Een docent in opleiding heeft een student in de klas die zijn/haar werk uitstekend doet, de docent in opleiding wil deze student belonen, hoe gaat de docent in opleiding hiermee om?
- Goede start
Stel een docent in opleiding komt in de volgende situatie terecht: Een docent in opleiding start net een nieuwe klas, wat zou de docent in opleiding als eerste ondernemen om tot een goede start te komen in de klas?

Positive behavior support is een framework dat kan helpen bij het inrichten van een effectieve en positieve leeromgeving.

Positive Behavior Support
- Zijn jullie bekend met deze term?
- Zijn docenten in opleiding bekend met deze term?
1. Op welke manier komt PBS terug in het curriculum van de Pabo?
  - In welke lessen krijgen de docenten in opleiding onderwijs in het implementeren van PBS?
  - Welke competenties kunnen gekoppeld worden aan de PBS principes?
  - Zien jullie meerwaarde in het gebruik van PBS?

Het oefenen van de verschillende vaardigheden is belangrijk voor docenten in opleiding. Een mogelijkheid hiervoor is het gebruik van een simulatie, waarin docenten in opleiding op een veilige manier kunnen leren: je hoeft het niet meteen goed te doen en het gaat niet ten koste van de studenten en de besluitvorming die onder je handelen ligt kan je expliciet maken: waarom maak ik deze keuze? Op Windesheim willen ze graag een simulatie ontwikkelen en dat integreren in ELO Een voorbeeld van een simulatie is simSchool, in de PPT zijn een aantal afbeeldingen te zien, waarbij ik kort vertel hoe de simulatie werkt.

Simulatie
1. Op welke manier zou een simulatie een bijdrage kunnen leveren aan het inrichten van een effectieve en positieve leeromgeving voor docenten in opleiding?
  - Wat spreekt u hierin aan?
  - Wat spreekt u hier niet in aan?
  - Wat zijn volgens u voordelen?
  - Wat zijn volgens u nadelen?
  - Wat is volgens u een meerwaarde?
  - Wat willen docenten in opleiding volgens u leren in een simulatie?
  - Welke mogelijkheden ziet u voor docenten in opleiding om te leren?
  - Op welke manier levert dit een bijdrage aan het verkleinen van het gat tussen theorie en praktijk?
  - Stel het is beschikbaar, wilt u er dan in werken?
  - Welke kenmerken/hulpmiddelen moeten er in een simulatie aan bod komen om bij te dragen aan het inrichten van een effectieve en positieve leeromgeving? (zoals bijvoorbeeld een vorm van reflectie, samenwerkend leren, discussiemogelijkheden etc.)

Gedurende de makkelijke en niet bedreigende vragen en niet moeilijke vragen zorgen voor **LSD**:
- **L**uisteren
- **S**amenvatten
  - Tijdens de focusgroep met regelmaat een samenvatting geven.
- **D**oorvragen
  - Kunt u daar een voorbeeld van geven?
  - Waar lopen de docenten in opleiding volgens u dan tegenaan?

- Beschrijf een situatie waarin docenten in opleiding dat hebben meegemaakt?
- Hoe zit dat voor jullie?
- Hoe bedoelt u dat?

5. **Afronden**
   a) Identificeren en organiseren van de grootste antwoorden van de deelnemers
   b) Zorg ervoor dat elk conversatie punt die niet is afgerond, hier wordt benoemd
   Jammer genoeg zit de tijd er al weer bijna op. Daarom ga ik proberen om de belangrijkste problemen en behoeftes die jullie hebben opgenoemd bij het inrichten van een positieve en effectieve leeromgeving te benoemen, de meerwaarde van PBS in het inrichten van een effectieve en positieve leeromgeving en op welke manier een simulatie een bijdrage kan leveren aan het inrichten van een effectieve en positieve leeromgeving. Wat zou u willen toevoegen aan mijn samenvatting?
   Er waren verschillende discussiepunten en onderwerpen die we besproken hebben, maar door tijdsgebrek hebben we deze discussie niet kunnen afronden (noemen welke discussiepunten niet zijn afgerond).

6. **Controle**
   a) Bepaal hoe elke deelnemer het geselecteerd onderwerp waarneemt
   Hier benoem ik één discussiepunt en dan zou ik graag willen weten hoe elk van jullie zich hierbij voelt. Ik ben hierbij niet opzoek naar een verdere discussie, maar hiermee wil ik graag een algemeen beeld krijgen over hoe u zich hierbij voelt. We hebben tijdens de focusgroep geconcludeerd dat er verschillende moeilijkheden zijn bij het inrichten van een effectieve en positieve leeromgeving. Het gebruik van PBS is een framework dat kan bijdragen aan het inrichten van zo'n effectieve en positieve leeromgeving. Wat vindt u van het leren via een simulatie? In hoeverre vindt u het leren in een simulatie een krachtige manier van leren om een effectieve en positieve leeromgeving in te richten? Op een schaal van 1 tot en met 5 geven jullie aan in welke mate jullie ermee oneens of eens zijn en waarom jullie dat vinden. En welke voordelen ziet u? En welke bedenkingen heeft u?

7. **Sluiten van verklaringen**
   a) Aanvraag van anonimiteit van informatie
   b) Beantwoording van alle resterende vragen
   c) Bedanken voor deelname
   We naderen het einde van de focusgroep en ik wil jullie eraan herinneren dat de opnames zullen worden getranscribeerd, hierbij wordt gebruikt gemaakt van valse namen of initialen, waardoor u dus anoniem blijft. Wanneer deze focusgroep is getranscribeerd en samengevat stuur ik het naar jullie op en kunt u aangeven of u ermee eens bent of niet. Ik vraag u ook om wat hier besproken is niet verder te verspreiden, omdat iedere deelnemer aan deze focusgroep anoniem mag blijven. Hoe heeft u deze focusgroep ervaren? Heeft u nog tips voor mij? Zijn er verder nog vragen die ik van jullie kan beantwoorden? Dan wil ik jullie hartelijk danken voor het deelnemen aan deze focusgroep. Dit was een zeer succesvol gesprek en uw eerlijke en openhartige antwoorden zullen een enorme aanwinst zijn voor mijn onderzoek. Nogmaals, heel erg bedankt en ik waardeer uw betrokkenheid heel erg.

8. **Introductie**
   d) Welkom
   Welkom en bedankt voor het deelnemen aan deze focusgroep. Allereerst stel ik mezelf voor, waarna ieder zichzelf mag voorstellen. Deze focusgroep wil ik graag opnemen, geeft ieder van u hier toestemming voor? Ieder van jullie is geselecteerd om deel te nemen aan deze focusgroep, omdat uw inbreng belangrijk is voor mijn onderzoek. Ik weet dat u het erg druk heeft en daarom stel ik het zeer op prijs dat u deelneemt aan mijn onderzoek. Deze focusgroep is geen test, noch mag deze focusgroep worden gezien als een reeks vragen met goede en foute antwoorden. Vergeet vooral niet, ik ben geïnteresseerd in wat u denkt en wat u voelt. Ik wil graag uw mening weten over bepaalde onderwerpen. Soms bent u het eens of niet mee eens met het gegeven wat een ander zegt, ik hoor graag wanneer u het wel of niet eens bent met het gene wat een ander zegt. Hierbij is het belangrijk dat de deelnemers elkaars antwoorden niet "kopiëren", maar antwoorden wat voor hun klopt ook al is het anders dan wat de andere deelnemers aangeven.

   e) Doel van het interview
   Het doel van deze focusgroep is om een duidelijk beeld te krijgen van de problemen en behoeften die docenten in opleiding ervaren in het inrichten van een positieve en effectieve leeromgeving. Het gaat in de praktijk niet alleen om de problemen die docenten in opleiding ervaren met betrekking tot de didactiek, maar ook om het inrichten van de leeromgeving en hoe hier in gehandeld wordt. Een framework hiervoor is PBS. En in hoeverre een simulatie een krachtig leermiddel kan zijn voor het inrichten van een effectieve en positieve leeromgeving.

   f) Richtlijnen voor het volgen van het interview
   Gedurende de focusgroep zijn er een paar richtlijnen, ik hoop dat u die wilt volgen. Ten eerste, u hoeft niet in een bepaalde volgorde te spreken, als u iets te zeggen heeft dan mag dat. Ten tweede, als iemand anders aan het woord is mag u er niet doorheen praten, soms is het verleidelijk om in te springen wanneer iemand aan het woord is, maar ik vraag u om dat niet te doen. Ten derde, vergeet niet dat er meerdere mensen deelnemen aan deze focusgroep en ik graag iedereen wil horen. Ten vierde, u hoeft niet in te stemmen met de problemen en behoeften die andere aanhalen/ervaren, maar u moet wel uw eigen problemen en behoeften/ervaringen verklaren, zonder negatieve opmerking. Tot slot, doordat ik een beperkte tijd heb voor het afnemen van de focusgroep (1 uur), kan het soms zijn dat ik een discussie stop om door te gaan met het volgende punt. Heeft u verder nog vragen?........ Oké, dan gaan we beginnen.

9. **Warming up**
   b) Zet de toon en stel de deelnemers op hun gemak
   U bent nu een derdejaars student, kunt u mij in het kort vertellen waar u nu stage loopt en in welke klassen u stage heeft gelopen en wat uw algemene ervaring is met het onderwijs?
   Of
   Hoeveelste jaars student bent u? Kunt u mij in het kort vertellen waar u nu stage loopt, in welke klassen u stage heeft gelopen en wat uw algemene ervaring is met het onderwijs?

10. **Verduidelijking van de termen**
    d) Bepaal de kennisbasis van kernbegrippen door vragen
    e) Zorg voor definities voor de belangrijkste termen.
    Termen die worden gebruikt gedurende deze focusgroep zijn effectieve en positieve leeromgeving en simulatie. De term effectieve en positieve leeromgeving verwijst naar zes op onderzoek gebaseerde elementen (1) opstellen van regels, verwachtingen en procedures (verwachtingen zijn de verwachtingen van de school en hebben betrekking op algemene normen van gedrag, bijv. respectvol, verantwoordelijk en coöperatief zijn, de regels moeten aansluiten bij de verwachtingen en de procedures. De procedures gaat over een manier hoe iets verloopt, dus de procedure moeten aan de student worden uitgelegd, voorgedaan, geoefend en de studenten moeten hier feedback op krijgen van de docenten), (2) disciplinaire interventies (refereert naar de interventies die gebruikt kunnen

worden wanneer de studenten de regels, verwachtingen en procedures niet opvolgen), (3) docent - student relatie (relatie tussen studenten en docenten), (4) mentale set (hierbij gaat het om de manier hoe een docent denkt, communiceert en zich gedraagt in de klas), (5) verantwoordelijkheid van studenten voor management (hieronder vallen zelf discipline, zelf management, zelf regulering, zelfcontrole, sociale vaardigheden, keuze van studenten met betrekking tot regels, consequenties, met als doel het vergroten van de afhankelijkheid, productiviteit en de integratie van de studenten), (6) goede start (aan het begin van het schooljaar een goede start maken). De term simulatie is het nabootsen van de werkelijkheid met behulp van een computerprogramma, het is een omgeving voor onderwijsdoeleinden en entertainment doeleinden. Zijn de begrippen voor iedereen duidelijk?

11. **Makkelijke en niet bedreigende vragen en moeilijkere vragen**
    c) De eerste vragen moeten algemeen zijn en minder bedreigend
    d) De moeilijke en persoonlijke vragen moeten hier worden vastgelegd
       Effectieve en positieve leeromgeving (punten van Marzano hier benoemen)
       - Herkent u deze punten?
       - Wat vindt u makkelijk?
       - Wat vindt u moeilijk?
       - Hoe komt het dat u daar geen problemen mee heeft?
       - Hoe gaat u hiermee om?/Hoe heeft u het aangepakt?
       - Hoe heeft u dat geleerd of ontwikkeld?
       - Wat zou u willen leren om hier vaardiger in te worden?
       - Hoe wilt u dit binnen de Pabo leren?
       - Welke punten vindt u nog meer bij een effectieve en positieve leeromgeving passen?
       - Wat vindt u makkelijk?
       - Wat vindt u moeilijk?
       - Wat zou u willen leren om hier vaardiger in te worden?
       - Hoe wilt u dit binnen de Pabo leren?

De zes 'evidence-based practices' van Marzano achter de hand houden en in situaties aanhalen, als nog niet alle punten van Marzano aan de beurt zijn geweest.
- Regels, procedures en verwachting
  Stel u komt in de volgende situatie terecht: U heeft in een klas een student zitten die u het bloed onder de nagels vandaan haalt, hoe zou u dat gedrag aanpakken?
- Disciplinaire interventies
  Stel u komt in de volgende situatie terecht: U heeft een klas waarin de studenten de regels netjes opvolgen, hoe gaat u hiermee om?
- Docent-student relatie
  Dit jaar bent u gestart met een nieuwe stage in een nieuwe klas en waarschijnlijk ook een nieuwe school, hoe pakt u het aan om een goede docent-student relatie op te bouwen?
- Mentale set
  Stel u komt in de volgende situatie terecht: U laat de studenten in tweetallen werken, na een poos merkt u op dat een tweetal studenten niet gewenst gedrag vertonen, hoe gaat u hiermee om?
- Verantwoordelijkheid van de studenten voor management
  Stel u komt in de volgende situatie terecht: Een student uit de klas vertoont uitstekend gedrag, u wilt deze student belonen, hoe gaat u hiermee om?
- Goede start
  Stel u komt in de volgende situatie terecht: U start net een nieuwe klas, wat zou u als eerste ondernemen om tot een goede start te komen in de klas?

Het oefenen van de verschillende vaardigheden is belangrijk voor docenten in opleiding. Een mogelijkheid hiervoor is het gebruik van een simulatie, waarin docenten in opleiding op een veilige manier kunnen leren: je hoeft het niet meteen goed te doen en het gaat niet ten koste van de studenten en de besluitvorming die onder je handelen ligt kan je expliciet maken: waarom maak ik deze keuze? Op Windesheim willen ze graag een simulatie ontwikkelen en dat integreren in ELO. Een

voorbeeld van een simulatie is simSchool, in de PPT zijn een aantal afbeeldingen te zien, waarbij ik kort vertel hoe de simulatie werkt.

Simulatie

2. Op welke manier zou een simulatie een bijdrage kunnen leveren aan het inrichten van een effectieve en positieve leeromgeving?
   - Wat spreekt u hierin aan?
   - Wat spreekt u hier niet in aan?
   - Wat zijn volgens u voordelen?
   - Wat zijn volgens u nadelen?
   - Wat is volgens u een meerwaarde?
   - Wat wilt u leren?
   - Welke mogelijkheden ziet u om te leren?
   - Op welke manier levert dit een bijdrage aan het verkleinen van het gat tussen theorie en praktijk?
   - Stel het is beschikbaar, wilt u er dan in werken?
   - Welke kenmerken/hulpmiddelen moeten er in een simulatie aanbod komen om bij te dragen aan het inrichten van een effectieve en positieve leeromgeving? (zoals bijvoorbeeld een vorm van reflectie, samenwerkend leren, discussiemogelijkheden etc.)

Gedurende de makkelijke en niet bedreigende vragen en niet moeilijke vragen zorgen voor **LSD**:
- **L**uisteren
- **S**amenvatten
  Tijdens de focusgroep met regelmaat een samenvatting geven.
  - Heb ik het op de juiste manier samengevat?
- **D**oorvragen
  - Kunt u daar een voorbeeld van geven?
  - Waar loopt u dan tegenaan?
  - Beschrijf een situatie waarin u dat hebt meegemaakt?
  - Hoe zit dat voor jullie?
  - Hoe bedoelt u dat?

12. **Afronden**
    c) Identificeren en organiseren van de grootste antwoorden van de deelnemers
    d) Zorg ervoor dat elk conversatie punt die niet is afgerond, hier wordt benoemd
       Jammer genoeg zit de tijd er al weer bijna op. Daarom ga ik proberen om de belangrijkste problemen en behoeftes van jullie op te noemen in het inrichten van een positieve en effectieve leeromgeving en op welke manier een simulatie een bijdrage kan leveren aan het inrichten van een effectieve en positieve leeromgeving. Wat zou u willen toevoegen aan mijn samenvatting?
       Er waren verschillende discussiepunten en onderwerpen die we besproken hebben, maar door tijdsgebrek hebben we deze discussie niet kunnen afronden (noemen welke discussiepunten niet zijn afgerond).

13. **Controle**
    b) Bepaal hoe elke deelnemer het geselecteerd onderwerp waarneemt
       Hier benoem ik één discussiepunt en dan zou ik graag willen weten hoe elk van jullie zich hierbij voelt. Ik ben hierbij niet opzoek naar een verdere discussie, maar hiermee wil ik graag een algemeen beeld krijgen over hoe u zich hierbij voelt. We hebben tijdens de focusgroep geconcludeerd dat er verschillende moeilijkheden zijn bij het inrichten van een effectieve en positieve leeromgeving. Wat vindt u van het leren via een simulatie? In hoeverre vindt u het leren in een simulatie een krachtige manier van leren om een effectieve en positieve leeromgeving in te richten? Op een schaal van 1 tot en met 5 geven jullie aan in welke mate jullie ermee oneens of eens zijn en waarom jullie dat vinden. En welke voordelen ziet u? En welke bedenkingen heeft u?

14. **Sluiten van verklaringen**
    d) Aanvraag van anonimiteit van informatie

e) Beantwoording van alle resterende vragen
f) Bedanken voor deelname
   We naderen het einde van de focusgroep en ik wil jullie eraan herinneren dat de opnames zullen worden getranscribeerd, hierbij wordt gebruikt gemaakt van valse namen of initialen, waardoor u dus anoniem blijft. Wanneer deze focusgroep is getranscribeerd en samengevat stuur ik het naar jullie op en kunt u aangeven of u ermee eens bent of niet. Ik vraag u ook om wat hier besproken is niet verder te verspreiden, omdat iedere deelnemer aan deze focusgroep anoniem mag blijven. Hoe heeft u deze focusgroep ervaren? Heeft u nog tips voor mij? Zijn er verder nog vragen die ik van jullie kan beantwoorden? Dan wil ik jullie hartelijk danken voor het deelnemen aan deze focusgroep. Dit was een zeer succesvol gesprek en uw eerlijke en openhartige antwoorden zullen een enorme aanwinst zijn voor mijn onderzoek. Nogmaals, heel erg bedankt en ik waardeer uw betrokkenheid heel erg.

Appendix 4. The simSchool Feedback Survey from Knezek and Christensen

Introduction: This survey asks questions about your attitudes toward and experiences with technology. Most of the survey is focused on your initial perceptions of simSchool itself. Please provide your first impressions.

1. Stars*** List two things you liked about simSchool (www.simSchool.org)
   a.   .
   b.   .

2. Wish*** List one thing you wish could be changed and/or added.
   a.   .

3. Rating*** Overall, how would you rate your experience with simSchool

         1   2   3   4   5

         Poor   Excellent

4. Rate how usable you found the product to be.

         1   2   3   4   5

         Very low   Very high

5. Additional suggestions or comments on experience or usability welcome:

6. Could you see differences in the students and how they responded to tasks and to your conversations? Did those responses make sense to you? Why or why not?

7. What did you make of the "colored timeline report?" Was it helpful? Could you Interpret it?

8. Were you able to make sense of the underlying instructional model? Or, put another way, as you played, did you get better at improving student outcomes? Please explain.

9. To what extent do you think computer games or simulations can be an important learning tool for K12 students? (circle one)

| Not at all important | A little important | Somewhat important | Important | Very important |

10. Why or why don't you think that computer games or simulations can be an important learning tool?

Please enter your email if address if you would like to continue to work with simSchool and stay involved in the activities of the simMentoring project:_____

Created by Gerald Knezek and Rhonda Christensen, Institute for the Integration of Technology into Teaching and Learning, University of North Texas.

Appendix 5. Coding Scheme

Code	Betekenis	Hoe coderen?
De problemen die de docenten in opleiding ervaren in het inrichten van een positieve en effectieve leeromgeving		
Tempo/Afstemming	Hierbij gaat het erom dat de docent in opleiding zijn lesgeven en omgang met de leerling afstemt om de klas en hierbij dus ook let op het tempo.	1.1
Mentaliteit/andere normen en waarden	Hierbij gaat het erom of er sprake is van een andere mentaliteit of andere normen en waarden bij ouders en/of leerlingen in de klas.	1.2
Flexibiliteit	Hierbij gaat het erom hoe flexibel de docent in opleiding is om zich aan te passen aan verschillende situaties.	1.3
Voorspelbaarheid (verwachtingen/duidelijk)	Hierbij gaat het erom hoe duidelijk de docent in opleiding is in de verwachtingen naar de leerlingen toe, zodat dat gedrag voorspelbaar wordt.	1.4
Regels aanleren en consequent hanteren	Hierbij gaat het om het aanleren van de regels op school- en klassenniveau en deze regels ook consequent blijven hanteren.	1.5
Wanneer ingrijpen bij negatief gedrag	Hierbij gaat het erom wanneer de docent in opleiding moet ingrijpen bij negatief gedrag.	2.1
Hoe ingrijpen bij negatief gedrag	Hierbij gaat het erom hoe de docent in opleiding moet ingrijpen bij negatief gedrag.	2.2
Hoe positieve feedback geven	Hierbij gaat het erom hoe de docent in opleiding positieve feedback aan de leerlingen in de klas kan geven.	2.3
Aangaan van positieve relaties/bouwen aan positieve relaties met leerlingen	Hierbij gaat het erom hoe de docent in opleiding positieve relaties met de leerlingen in de klas opbouwt.	2.4
Afstemmen op de groep	Hierbij gaat het erom of de docent in opleiding de les, consequenties, gedrag etc., afstemmen op de behoeftes van de groep of de individuele leerling.	3.1
Omgaan met groepsdynamiek	Hierbij gaat het erom hoe de docenten in opleiding omgaan met het gedrag van de leerlingen in een groep.	3.2
Zelfregulatie	Hierbij gaat het erom dat de docent in opleiding beschikt over zelfregulatie, zodat de docent in opleiding niet impulsief iets door de klas heen roept.	4.1
Zelfvertrouwen (om het los te laten)	Hierbij gaat het erom dat de docent in opleiding genoeg zelfvertrouwen heeft om dingen in de klas te	4.2

kunnen loslaten.

Controle houden/Loslaten	Hierbij gaat het erom dat de docent in opleiding weet tot op welke hoogte hij of zij controle weet te houden en wanneer los te laten, om de zelfstandigheid van leerlingen te bevorderen.	4.3
Grenzen bepalen	Hierbij gaat het erom dat de docent in opleiding voor zichzelf duidelijke grenzen bepaalt, 'tot hier en niet verder'.	4.4
Vertrouwen op de kracht van leerlingen	Hierbij gaat het erom dat de docent in opleiding vertrouwen moet tonen in de kracht van de leerlingen in de klas.	5.1
Ruimte geven aan leerlingen	Hierbij gaat het erom dat de docent in opleiding ruimte geeft aan de leerlingen in de klas.	5.2
Voorbereiden eigen introductie	Hierbij gaat het erom als je als docent in opleiding voor het eerst in een nieuwe klas komt, hoe bereiden zij zich dan voor.	6.1
Hoe volg en waardeer je de ontwikkeling	Hierbij gaat het erom hoe volgt de docent in opleiding de ontwikkeling van de leerlingen in de klas en hoe waarderen ze dat.	6.2
Hoe begeleid je de ontwikkeling	Hierbij gaat het erom hoe de docent in opleiding de leerlingen begeleid in hun ontwikkeling.	6.3
Gezag	Hierbij gaat het om het gezag dat de docent in opleiding in de klas heeft.	6.4
stagiaire' rol verwisseling naar leerkracht	Hierbij gaat het erom dat docenten in opleiding in het vierde jaar van hun opleiding het eerste halfjaar vaak nog 'stagiaire' zijn en nadat halfjaar verandert hun positie naar leerkracht.	7.1
Hoe voel ik me	Hierbij gaat het erom hoe de docent in opleiding zich voelt die dag, heeft dat invloed op de houding en de reactie richting de leerlingen.	7.2
Ervaring	Hierbij gaat het erom welke ervaring de docenten in opleiding al hebben verkregen door stages ed.	7.3
In hoeverre ben je lerend	Hierbij gaat het erom in hoeverre de docent in opleiding open staat om dingen te leren gedurende de opleiding.	7.4
Motivatie/inzet	Hierbij gaat het erom hoe gemotiveerd de docent in opleiding is en de inzet die wordt getoond.	7.5
Afstand en nabijheid	Hierbij gaat het erom welke afstand de docent in opleiding neemt met de leerlingen, terwijl je wel denkt om de nabijheid	7.6

De behoeftes die de docenten in opleiding hebben bij het inrichten van een positieve en effectieve leeromgeving

Relatie theorie en praktijk	De docenten in opleiding hebben behoefte aan het oefenen van de theorie binnen de opleiding, omdat ze de theorie vaak wel te horen krijgen en het zich niet eigen maken	8.1
Oefenen op stages	De docenten in opleiding hebben behoefte om de aangeleerde theorie binnen de stages meer te oefenen, hiervoor moeten ze wel de veiligheid binnen hun stage ervaren en de begeleider moet hierbij begeleiden	8.2
Geen behoefte	De docenten in opleiding hebben geen behoefte aan het leren van meerdere dingen op het gebied van het inrichten van een effectieve en positieve leeromgeving, zij vinden dat ze al genoeg leren en genoeg handreiking krijgen aangeboden	8.3
Wel behoefte	De docenten in opleiding hebben wel behoefte aan het leren of inoefenen van meerdere dingen op het gebied van het inrichten van een effectieve en positieve leeromgeving	8.4

Positive Behavior Support (PBS)

Bekend met PBS	De docenten van Windesheim zijn bekend met de term PBS	9.1
PBS binnen de Pabo	Hoe komt PBS naar voren binnen de Pabo	9.2
PBS omvat alle SBL competenties	De SBL competenties die worden aangeboden op de Pabo zijn allemaal onder te verdelen in PBS	9.3

Simulatie

Aansluiting werkelijkheid	In hoeverre sluit de simulatie aan bij de werkelijkheid	1
Nederlandstalig	De taal is een probleem in de simulatie	2
Zelf intypen	De mogelijkheid om zelf een reactie in te kunnen typen in de simulatie	3
Non-verbale	De houding van de kinderen en docent en de non-verbale reacties in de simulatie	4
'fun factor'	De simulatie moet leuk zijn om te doen	5
Grafieken/Data (+ feedback)	Het interpreteren en kunnen aflezen van de grafieken in de simulatie	6

Samenwerking	De samenwerking tussen de docenten in opleiding die oefenen in de simulatie	7
Reacties	De reacties van de gesimuleerde studenten in de klas en de reacties die je aan de gesimuleerde studenten kan geven	8
Taken	De taken die je aan de gesimuleerde studenten kan geven	9
Mogelijkheid tot oefenen	De mogelijkheid voor docenten in opleiding om te oefenen en te experimenteren in de simulatie	10
Ontwerpen bepaalde simStudenten	In de simulatie moet er de mogelijkheid zijn om verschillende gesimuleerde studenten te ontwerpen	11
Aansluiten onderwijsvisie	De simulatie moet aansluiten bij de onderwijsvisie van scholen hier in Nederland	12
Gebruiksvriendelijkheid	De simulatie moet makkelijk te gebruiken zijn voor de docenten in opleiding, zodat ze direct kunnen beginnen met oefenen	13
Effect handelen	Heeft het handelen van de docent in opleiding effect op de gesimuleerde studenten in de voorbeeld simulatie?	14
Meetbaar onderwijs	Beter onderwijs komt niet door meetbaarder, maar door meer inzicht en didactische kennis	15
Niet gebruiken	De docent in opleiding is duidelijk dat hij/zij nooit met een simulatie zou gaan werken	16
Begeleiding	De gesimuleerde studenten moeten goed begeleid worden in de simulatie door de docent in opleiding	17
Onderscheid tussen individu en groep	In de simulatie moet er duidelijk onderscheid zijn tussen de individuele gesimuleerde studenten en de hele groep	18
Complexe situaties	Het oefenen met gesimuleerde studenten met bepaalde extremen en in bepaalde klassen, zoals ADHD/ADD en combinatieklassen etc., studenten en klassensamenstellingen die je niet tegenkomt in je stage	19
Feedback/reflectie/begeleiding	De feedback en de reflectie die studenten ontvangen tijdens het oefenen en de begeleiding van de docent hierbij	20
Theoretische bronnen en hulplijnen	De simulatie moet theorieën omvatten en hulplijnen die de docenten in opleiding kunnen gebruiken	21
Opdrachten	De simulatie moet opdrachten bevatten, zodat docent in opleiding gericht aan de slag gaan	22

Meerwaarde	De simulatie moet een meerwaarde bevatten	23
Bewust onderwijs geven	De docenten in opleiding moeten bewust onderwijs geven, dus dat ze er echt over nadenken	24
Niveau aanpassen aan student	De simulatie moet aansluiten bij het niveau van de docenten in opleiding	25
Transfer	De stap van de simulatie naar de echte klas en als de docent in opleiding de transfer kan maken als het in een andere situatie terecht komt	26
Generatiekloof	Het verschil tussen leeftijden bij het werken in een simulatie, tussen docenten en docenten in opleiding	27
Vertaling simulatie	De vertaling van de complexiteit en de vaardigheden naar een simulatie	28
Ideale leeromgeving	Het ontwerpen van een ideale leeromgeving in een simulatie en de controle daarover behouden	29
Stages	Meer stages zijn effectiever dan het werken in een simulatie	30
Gericht op geleerde	De docenten in opleiding oefenen het geleerde in de simulatie	31
Keuze mogelijkheden	De docent in opleiding beslist zelf wat hij/zij wil oefenen in een simulatie	32
'Trial and error'	De docenten in opleiding oefenen door vallen en opstaan en zonder bewust over keuzes na te denken	33
Competenties in simulatie	De competenties die in de simulatie kunnen worden toegepast	34
Genen	De docenten in opleiding moeten het lesgeven in de genen hebben en kunnen dit niet leren door te oefenen in een simulatie	35
Toevoeging op stage	De simulatie moet niet worden gezien als vervanging, maar als toevoeging op de stage	36

Appendix 6. Calculating Cohen's Kappa focus group

38/62=0.6129032258064516

Code	Berekening
1.1	1 x 2 = 2 / 62 = 0,0323
1.2	0 x 0 = 0 / 62 = 0
1.3	0 x 1 = 1 / 62 = 0
1.4	3 x 2 = 6 /62 = 0,0968
1.5	1 x 2 = 2 /62 = 0,0323
2.1	3 x 2 = 6 /62 = 0,0968
2.2	2 x 3 = 6 /62 = 0,0968
2.3	0 x 0 = 0 /62 = 0
2.4	3 x 5 = 15 /62 = 0,2419
3.1	1 x 0 = 0 /62 = 0
3.2	0 x 1 = 0 /62 = 0
4.1	2 x 1 = 2 /62 = 0,0323
4.2	2 x 0 = 0 /62 = 0
4.3	3 x 1 = 3 /62 = 0,0484
4.4	2 x 3 = 6 /62 = 0,0968
5.1	1 x 1 = 1 /62 = 0,0161
5.2	1 x 1 = 1 /62 = 0,0161
6.1	1 x 1 = 1 /62 = 0,0161
6.2	0 x 0 = 0 /62 = 0
6.3	0 x 1 = 0 /62 = 0
6.4	0 x 1 = 0 /62 = 0
7.1	1 x 1 = 1 /62 = 0,0161
7.2	0 x 0 = 0 /62 = 0
7.3	0 x 0 = 0 /62 = 0
7.4	0 x 0 = 0 /62 = 0

7.5	$1 \times 1 = 1 / 62 = 0{,}0161$
7.6	$0 \times 0 = 0 / 62 = 0$
8.1	$1 \times 0 = 0 / 62 = 0$
8.2	$1 \times 0 = 0 / 62 = 0$
8.3	$0 \times 0 = 0 / 62 = 0$
9.1	$1 \times 1 = 1 / 62 = 0{,}0161$
9.2	$1 \times 1 = 1 / 62 = 0{,}0161$
9.3	$2 \times 2 = 4 / 62 = 0{,}0645$
1	$2 \times 4 = 8 / 62 = 0{,}1290$
2	$0 \times 0 = 0 / 62 = 0$
3	$0 \times 0 = 0 / 62 = 0$
4	$0 \times 0 = 0 / 62 = 0$
5	$0 \times 0 = 0 / 62 = 0$
6	$0 \times 0 = 0 / 62 = 0$
7	$0 \times 0 = 0 / 62 = 0$
8	$0 \times 1 = 0 / 62 = 0$
9	$0 \times 1 = 0 / 62 = 0$
10	$3 \times 2 = 6 / 62 = 0{,}0968$
11	$1 \times 0 = 0 / 62 = 0$
12	$3 \times 2 = 6 / 62 = 0{,}0968$
13	$0 \times 0 = 0 / 62 = 0$
14	$0 \times 0 = 0 / 62 = 0$
15	$0 \times 0 = 0 / 62 = 0$
16	$0 \times 0 = 0 / 62 = 0$
17	$0 \times 0 = 0 / 62 = 0$
18	$0 \times 0 = 0 / 62 = 0$
19	$2 \times 2 = 4 / 62 = 0{,}0645$
20	$0 \times 0 = 0 / 62 = 0$

21	2 x 1 = 2 /62 = 0,0323
22	0 x 0 = 0 /62 = 0
23	1 x 1 = 1 /62 = 0,0161
24	3 x 4 = 12 /62 = 0,1935
25	0 x 0 = 0 /62 = 0
26	2 x 0 = 0 /62 = 0
27	1 x 1 = 1 /62 = 0,0161
28	2 x 1 = 2 /62 = 0,0323
29	1 x 1 = 1 /62 = 0,0161
30	1 x 0 = 0 /62 = 0
31	0 x 0 = 0 /62 = 0
32	0 x 0 = 0 /62 = 0
33	2 x 2 = 4 /62 = 0,0645
34	1 x 3 = 3 /62 = 0,0484
35	1 x 1 = 1 /62 = 0,0161
36	0 x 1 = 0 /62 = 0
Totaal	1,7742 / 62 = 0,0286

38 – 1.7742 / 62 – 1.7742 =

36.2258 / 60.2258 = 0,6015

Appendix 7. Questionnaire lesson simSchool

Je hebt nu 3 lessen gewerkt in de simulatie simSchool, dit is een voorbeeld simulatie. Door middel van deze vragenlijst wil ik graag inzicht krijgen in jullie ervaring met betrekking tot het werken in simSchool en in de punten die jullie belangrijk vinden wanneer er een **nieuwe simulatie** wordt ontwikkeld.

1. Was je, voordat je begon met het werken in simSchool, al bekend met een simulatie?
   o   Ja
   o   Nee

2. Had je, voordat je begon met het werken in simSchool, al eerder in een simulatie gewerkt?
   o   Ja, welke?...
   o   Nee

3. Beoordeel je ervaring in simSchool?

1	2	3	4	5
slecht	matig	voldoende	goed	uitstekend

4. Aanvullende suggesties en/of opmerking over je ervaring in simSchool zijn welkom:

....
....
....
....
....
....

5. Beoordeel hoe bruikbaar je de voorbeeld simulatie simSchool vindt op onderstaande punten?

	Erg laag	Laag	Gemiddeld	Hoog	Erg hoog
Gebruikers interface					
Inhoud					
Taken die je kunt geve					
Reacties die je kunt geven					
Analyseren van studenten gedrag					
Reflecteren op je eigen gedrag als docent					
Communicatie					
Feedback ontvangen					
Samenwerking					
Mogelijkheid om te oefenen/experimenteren					
Aansluiting bij de praktijk					

6. Aanvullende suggesties en/of opmerking over de bruikbaarheid van het ontwikkelen van een **nieuwe simulatie** zijn welkom:

....
....
....
....
....
....

7. Geef minimaal 2 punten weer die je goed vindt aan simSchool en die moeten worden meegenomen in het ontwikkelen van een **nieuwe simulatie**?

....
....
....
....
....
....

8. Geef minimaal 2 punten weer die je graag gewijzigd of aangevuld wilt zien in de **nieuwe simulatie**?

....
....
....
....
....
....

9. Tijdens de lessen heb je samengewerkt met een medestudent, hoe belangrijk is de samenwerking met een medestudent voor jouw? Leg uit.

1	2	3	4	5
niet heel belangrijk	een beetje belangrijk	enigzins belangrijk	belangrijk	heel erg belangrijk

....
....
....
....
....
....

10. Aanvullende suggesties en/of opmerking over de toepassing van samenwerking in de **nieuwe simulatie**?

....
....
....
....
....
....

11. Heeft jouw handelen effect op de studenten in de voorbeeld simulatie simSchool?

....
....
....
....
....
....

12. Waren de grafieken tijdens de lessen simSchool nuttig? Leg uit.

....
....
....
....
....
....

13. Kon je de grafieken tijdens de les simSchool interpreteren? Leg uit.

....
....
....
....
....
....

14. Waren de grafieken aan het eind van de les in simSchool nuttig? Leg uit.

....
....
....
....
....
....

15. Kon je de grafieken aan het eind van de les simSchool interpreteren? Leg uit.

....
....
....
....
....
....

16. Op welke manier kon je na het bekijken van de grafieken je handelen aanpassen en de leerling resultaten verhogen? Leg uit.

....
....
....
....
....
....

17. In welke mate denk je dat simSchool een belangrijk leermiddel is voor docenten in opleiding?

1	2	3	4	5
niet heel belangrijk	een beetje belangrijk	enigzins belangrijk	belangrijk	heel erg belangrijk

18. In welke mate denk je dat een **nieuwe simulatie** (aangepast met jouw suggesties en/of opmerkingen) een belangrijk leermiddel is voor docenten in opleiding?

1	2	3	4	5
niet heel belangrijk	een beetje belangrijk	enigzins belangrijk	belangrijk	heel erg belangrijk

19. Waarom denk je dat een simulatie wel of niet een belangrijk leermiddel kan zijn voor docenten in opleiding?
....
....
....
....
....
....

20. Wat moet er anders zijn in de **nieuwe simulatie** om een belangrijk leermiddel te zijn voor docenten in opleiding?
....
....
....
....
....
....

21. Wat vind je belangrijke kenmerken in een simulatie?
....
....
....
....
....
....

Bedankt voor deelname

Appendix 8. Coding questionnaire lesson simSchool

1. Was je, voordat je begon met het werken in simschool, al bekend met een simulatie?

	Ja	Nee
Hoeveel?	3	8

2. Had je, voordat je begon met het werken in simSchool, al eerder in een simulatie gewerkt?

	Ja	Nee
Hoeveel?	4	7

Flight simulator
Football manager, simcity, sims, rollercoaster tycoon
Rollercoaster tycoon, simcity
Sims 2

3. Beoordeel je ervaring in simSchool

	Slecht	Matig	Voldoende	Goed	Uitstekend
Hoeveel?		2	7	2	

Goed: Mits het in het Nederlands is

4. Aanvullende suggesties en/of opmerkingen over je ervaring in simSchool zijn welkom:

Leuk programma (6), alleen niet te vergelijken met de praktijk (2)

Het staat erg ver weg van de werkelijkheid vind ik (2)

Meerdere talen (1)

Heldere reacties van de leerlingen (4)

Hoe meer leerlingen hoe leuker (8)

Het is een leuk programma (6), maar ik heb niet het gevoel dat het aansluit met de werkelijkheid (2)

Als je ze een taak geeft, voeren ze het heel vaak niet uit (8)

Reacties van de kinderen in de klas zijn niet echt reeel (2)

Het is heel nep, het lijkt niet op een echte klas (2)

Jammer dat je niet "gewoon" met de leerlingen kan praten (8)

Je zit vast aan de standaard vragen/antwoorden (8)
Het idee dat je gedrag van leerkracht en leerling om kunt zetten in formules en dat je die vervolgens kunt trainen en dan weer naar de realiteit

kunt vertalen komt op mij niet realistisch en onprettig over (2)

Het is niet erg realistisch (2), praktijk is veel leerzamer (3). Ook is het vervelend dat het Engels is (1). Wel geinig om te doen (6)
Als de simulatie in het Nederlands is dan zal het een stuk makkelijker zijn en kun je veel sneller op leerlingen reageren. Nu ben ik erg veel tijd

kwijt aan het zoeken naar de juiste opdracht of opmerking voor de leerlingen (1)

N.V.T.

Dat je zelf dingen kan zeggen tegen de leerlingen, niet van die kant en klare zinnen (8)

5. Beoordeel hoe bruikbaar je de voorbeeld simulatie simSchool vindt op onderstaande punten?

	Erg laag		Laag		Gem.		Hoog		Erg hoog
Gebruikers interface (3)	1		3		7				
Inhoud (2)			1		5	1	4		
Taken die je kunt geven (8)			2		3		6		
Reacties die je kunt geven (4)			5		2		4		
Analyseren van studenten gedrag (5)					4		5		2
Reflecteren op je eigen gedrag als docent (5)			4	2	3		1		1
Communicatie (4)	1		2		8				
Feedback ontvangen (5)			5		4		1		1
Samenwerking (7)			4		4		3		
Mogelijkheid om te oefenen/experimenteren (4)			4		4	1	1		1
Aansluiting bij de praktijk (2)	5		5		1				

6. Aanvullende suggesties en/of opmerkingen over de bruikbaarheid van het ontwikkelen van een nieuwe simulatie zijn welkom:

Je eigen antwoorden kunt typen, zelf bepalen wat je terug kunt zeggen (8)

Taken maken die passen bij de werkelijkheid op een basisschool (2)

In het Nederlands (1)

Soms teveel taken, te veel keus, zonder dat je je er echt in verdiept hebt (8)

Er zijn een beetje te veel verschillen en reacties om klas draaiende te houden (4), niet reeel (2)

Dat je zelf kan intypen wat je tegen de studenten wil zeggen (8)

Reacties van kinderen kun je niet 'maken' (2)

Minder nep maken (2)

Zelf zinnen kunnen typen (8) en de emotie kunnen aanklikken (1)

Als je het al doet zou ik het gericht op één of twee samenhangende deeltaken (competenties) doen (9). Is nog minder realistisch (2), maar wel

duidelijker

Nederlands talig (1)

Voorbeelden + uitleg uitgebreider (3)

Meer vrijheid in wat je mag/kan zeggen (8)

Zelf leerlingen kunnen ontwerpen met bepaalde voorvallen (8) (bijv. oefenen met een kind dat ADHD heeft, maar dat je zelf van te voren kunt

invullen hoe de leerling is) (8) (4)

Het sluit niet aan bij de praktijk (2)

In het Engels is lastig, als het in het Nederlands zou zijn kun je sneller reageren (1)

Meer aansluiting bij de echte wereld (2)

7. Geef minimaal 2 punten weer die je goed vindt aan simSchool en die moeten worden meegenomen in het ontwikkelen van een nieuwe simulatie?

Via grafieken kun je zien wat de resultaten zijn (5)

Wordt goed en overzichtelijk weergeven (3)

Het gedrag analyseren (5)

Je kan veel reacties geven op gedrag (4)

Grafieken op verschillende niveaus (5)

Keuze van taken voor de klas en per individu (8) (9)

Thermometer (5)

Klok (5)

Analyseren van het gedrag -> grafiek (5)

Uitdrukkingen van leerlingen (1)

Je kan alles goed analyseren, dit werkt erg prettig en het is erg overzichtelijk in een pdf (5)

Feedback is erg goed, duidelijk en overzichtelijk (5)

Directe reactie van de kinderen (4)

Onderscheid individu/groep (9)

Veel keuzes (4/8)

Cartoon, plaatjes, maken het toegankelijker (3)

De grafieken en tabellen (5)

Het verschil tussen situaties kunnen oefenen (4)

Je ziet hoe leerlingen reageren op een positieve/negatieve reactie (4)

Je ziet in dat het lastig is om 1 of meerdere studenten de hele tijd te vreden houden (3)

Rapport is duidelijk (5)

De simulatie ziet er goed uit (3)

8. Geef minimaal 2 punten weer die je graag gewijzigd of aangevuld wilt zien in de nieuwe simulatie?

Keuze mogelijkheden van de antwoorden (4)

Keuze van taken (8)

Nederlandse tekst (1)

Minder reacties (4) -> reeelere reacties (2)
Minder reacties voor beginners (4), opbouwend niveau/oefenlessen waarbij instructie krijgt (8)
(7)

Dat je je eigen opmerking kan intypen voor studenten (8)

Dat studenten iets sneller de opdrachten oppakken die je ze geeft (2)

Reacties van kinderen zijn vaak hetzelfde en onverwacht. Dan hoop je dat ze doen wat jij zegt, maar dan doen ze het tegenovergestelde (4)

Nederlandse les geef stijl (9)

Het moet meer realistisch worden (2)

Het moet leuk om te doen worden (6)

Gericht op Nederlanse/Europese onderwijsvisies (9)

Nederlandse begrippen gebruiken (1)

Minder houterig (3)

Concreter, nu is het erg gedetailleerd (3)
Reacties van leerlingen iets uitgebreider
(4)

Veel meer zelf kunnen kiezen qua interactie (8)

Een Nederlandse versie (1)

Zelf typen i.p.v. voorgeschreven taken (8)

Meer reactie mogelijkheden (4) (dat je het zelf kan intypen) (8)

Nederlandse simulatie (1)

9. Tijdens de lessen heb je samengewerkt met een medestudent, hoe belangrijk is de samenwerking met een medestudent voor jouw? Leg uit.

	Niet heel belangrijk	Een beetje belangrijk	Enigszins belangrijk	Belangrijk	Heel erg belangrijk
Hoeveel?			3	7	1

Heb je ook een kijk van hoe iemand anders zou reageren op een bepaalde student en wat die reactie voor invloed heeft op het gedrag van het kind (7)

Je kon samen je mening geven over een leerling en je meningen delen (7)

Voor het begin is het redelijk ingewikkeld en kan je samenwerken (7)

Dit maakt het interessanter, omdat je je keuzes overlegd, je denkt meer na over wat je doet (7)

Ik vind het prima om samen te werken, maar alleen vind ik ook geen probleem (7)

Hier was het handig om de één te laten lezen en de ander het uit te laten voeren (7)

Je kunt samen overleggen wat je gaat doen en het geeft ook iets meer plezier in het werken (7)

Heel belangrijk, je werkt samen en je kan er samen over praten en dat werkt erg prettig (7)

Je kunt op momenten dat je even niet weet wat te doen overleggen (7)

Het is makkelijker te begrijpen (7)

Het is wel minder uitdagen, omdat jij zelf niet kon kiezen wat je wilde (7)

Dan kun je samen overleggen wat de beste manier is waarop je steeds moet reageren (7)

Het gaat iets sneller (7)

Je kunt dan samen overleggen wat je nu het best kan doen (7)

10. Aanvullende suggesties en/of opmerkingen over de toepassing van samenwerking in de nieuwe simulatie?

Eventueel meer opdracht gericht samenwerken (7)

Nee, het is goed zo (7)

Het belangrijkste is dat het leuk wordt, het moet een soort spel worden (6), maar dat wel realistisch is (2)

Taken verdelen, de éé doet de klas, de ander checked de individuele leerlingen (bijv.) (7)

Gekoppelde interface op 2 computers (7)

Eerste lessen samen, daarna alleen (misschien vergelijken met elkaar) (7)

Dit zou ik zeker aanraden (7)

Met 3 is net iets teveel, 2 is handiger. De een kan de handleiding gebruiken en de ander de computer besturen (7)

Die moet zo blijven met 2 studenten lukt het goed (7)

11. Heeft jouw handelen effect op de studenten in de voorbeeld simulatie simSchool?

	Ja	Soms	Nee	Nauwelijks		Geen antwoord	
Hoeveel?	7	2		1		1	

Ja, maar niet altijd. Ligt aan je commentaar (4). En ook lang niet altijd een positieve reactie, meer negatief dan positief (5)

Ja, bij een makkelijke taak wel, maar is de taak te moeilijk dan doen ze echt niks (5)

Soms, het is moeilijk de juiste reactie te kiezen (4)

Op sommige momenten, maar meestal zag ik dit niet terug (5)

Ja, leerlingen moet je goed begeleiden aan de hand van hun profiel, hier reageren ze goed op (5)

Ja, maar niet dat wat ik wilde bereiken (5)

Nauwelijks, het handelen lijkt geen invloed te hebben (5)

Ja, als je positief bent gaat het beter, dat is in het echt ook zo (5)

Ja, dat heeft zowel positieve als negatieve effecten gehad (5)

Je zag dat leerlingen uit het voorbeeld een bepaalde houding hadden, dit was niet altijd te veranderen (5)

Ja, vaak wel. Je ziet ze wel vooruit gaan (5)

12. Waren de grafieken tijdens de lessen simSchool nuttig? Leg uit.

	Ja	Soms	Nee
Hoeveel?	9		2

Ja, zo zie je hoe ze zich voelen (5)

Ja, je krijgt direct een indruk waar je ook gelijk nog wat mee kan doen om de resultaten te verbeteren (5)

Ja, zo kon je zien of jou reacties en taken aanslaan (5)

Ja, je ziet goed hoe ze werken en hoe ze zich voelen (5)

Ja, daarin kun je duidelijk de vooruit of achteruitgang van de kinderen op verschillende gebieden zien (5)

Ja, maar het was erg klein, je ziet niet meteen of je handelen effect heeft gehad (5)

Nee, deze onderwijstermen gebruiken we niet, dus zegt het me niets (5)

Ja, in een oogopslag makkelijk af te lezen (5)

Ja, maar nog wel best overzichtelijk (5)

Niet echt, je zag wel of iets positief of negatief is (5) maar het blijft nep (2)

Ja, zo wist je op welk niveau ze zaten en wat ze leuk vonden (5)

13. Kon je de grafieken tijdens de les simSchool interpreteren? Leg uit.

	Ja	Soms	Nee	Redelijk
Hoeveel?	9	0	1	1

Ja, je kon duidelijk zien hoe de student zich voelde, of hij wat leerde. Ook de houding van het kind gaf dat aan (5)

Ja, het was duidelijk aangegeven (5)

Ja, het was duidelijk met kleur en een 0lijn aangeven. Het klokje was iets moeilijker (5)
Ja, die vond ik zoals eerder al gezegt erg handig. Je kan dan gelijk erop in spelen door bijv. een andere taak te geven (5)

Ja, doordat je meerdere lijnen in een grafiek had, kon je de verschillen goed zien, welke punten waren sterk en welke niet (5) Niet gebruikt, omdat het hier niet bij hoort
Jawel, het werd pas na een minuut duidelijk in je grafiek (5) (niet gebruikt, omdat het niet bij deze vraag hoort)

Nee, deze onderwijstermen gebruiken we niet, dus zegt het me niets (5)

Ja, duidelijk (5)

Redelijk, ik begreep het niet altijd (5)

Ja, je zag in lijnen (boven of onder de 0) wat positief was moet je de volgende keer weer doen en het negatieve zou je aan kunnen werken (5) (Niet gebruikt, omdat het antwo

Ja, die kon je gebruiken (5)

14. Waren de grafieken aan het eind van de les simSchool nuttig? Leg uit.

	Ja	Soms	Nee/Niet echt
Hoeveel?	9		2

Ja, voor jou als leerkracht weet je wat je de volgende keer anders kunt doen (5)

Ja, je zag duidelijk per onderdeel de gevolgen van je handelen wat je weer kon gebruiken bij de volgende les (5)

Ja, je kon goed zien hoe de leerlingen reageerden en op welke gebieden hij goed scoorde (5)

Ja, maar als je de studenten een taak gaf die te moeilijk was, kelderde de grafiek enorm (5)

Ja, daarin kun je duidelijk de vooruit of achteruitgang van de kinderen op verschillende gebieden zien (5)

Ja, je kon zien of het bij de leerlingen effect had (5)

Nee, deze onderwijstermen gebruiken we niet, dus zegt het me niets (5)

Ja, interessant om zo ernaar te kijken (5)

Ze zijn wel goed te gebruiken als je erachter wilt komen waarom leerlingen op bepaalde momenten reageren (5)

Niet echt, je zag wel verandering maar ik vind het niet echt nuttig (5)

Ja, want zo kan je zien of de leerlingen vooruit zijn gegaan tijdens jouw les (5)

15. Kon je de grafieken aan het eind van de les simSchool interpreteren? Leg uit.

	Ja	Soms	Niet helemaal	redelijk
Hoeveel?	7	1	1	

Ja, je kan zien hoe het kind zich voelde (5)

Er was veel verschil in de lijn. Je snapte niet altijd waarom de lijn nu stijgend was (5)

Ja, met de lijnen was het goed zichtbaar (5), alleen de uitleg per lijn was makkelijker in het Nederlands (1)

Ja, maar beredeneren waarom het lijntje omhoog of omlaag gaat is wel lastig (5)

Niet helemaal, heel veel verschil in de lijn, waardoor ik me wel af vroeg waardoor is de lijn nu stijgend (5)

Ja, het was duidelijk wat je had gedaan en of het effect had (5)

Nee, deze onderwijstermen gebruiken we niet, dus zegt het me niets (5)

Ja, het was goed af te lezen (5)

Redelijk, ik begreep het niet altijd, maar dat komt ook doordat het in het Engels was (1)

Ja, je zag in lijnen (boven of onder de 0) wat positief was moet je de volgende keer weer doen en het negatieve zou je aan kunnen werken (5)
Ja, ik kan zien wat er mee werd bedoeld (5)

16. Op welke manier kon je na het bekijken van de grafieken je handelen aanpassen en de leerling resultaten verhogen? Leg uit.

Door vragen en opdrachten te geven aan de leerlingen (5)

Vooral tijdens de les kon je goed de resultaten verhogen door de taak aan te passen of een opmerking te geven (5)

Vooral door stijging of dalen op bepaalde gebieden, op dat gebied concentreer je je dan vooral bij de herhaling (5)

Je kon reageren op haar gedrag en haar handelen, waardoor ze soms aan het werk gingen of luisterden, vaak reageerden ze ook niet (5)

Door uitdagende opdrachten te kiezen en juiste reacties te geven (5)

Dan weet je voor de volgende keer wat je anders moet of kan doen, maar geen kind is hetzelfde (5)

Nee, deze onderwijstermen gebruiken we niet, dus zegt het me niets. Ik weet niet welke termen ik aan elkaar moet koppelen (5)

Als 'neuroticism' bijv. hoog is, en ik zie dat dit komt omdat ik een popquiz geven heb, heb ik geen idee wat dit eigenlijk betekend (5)

Niet vaak gedaan, maar zo kun je wel makkelijk vergelijken hoe je iets kan verbeteren door iets te zeggen (5)

Dit ging wel goed. Door precies te kijken wat je verkeerd deed dan kon je hier op inspelen in de volgende les. Je weet wat voor reacties of opdrachten je de leerlingen moet geven (5)

Een andere taak (5)

Positiever/negatiever (5)

Dat sommige taken beter moest uitleggen of dat die te moeilijk waren (5)

17. In welke mate denk je dat simSchool een belangrijk leermiddel is voor docenten in opleiding?

	Niet heel belangrijk	Een beetje belangrijk	Enigszins belangrijk	Belangrijk	Heel erg belangrijk
Hoeveel?	4	4	2	1	

18. In welke mate denk je dat een nieuwe simulatie (aangepast met jouw suggesties en/of opmerkingen) een belangrijk leermiddel is voor docenten in opleiding?

	Niet heel belangrijk	Een beetje belangrijk	Enigszins belangrijk	Belangrijk	Heel erg belangrijk
Hoeveel?	2	2	3	1	3	

19. Waarom denk je dat een simulatie wel of niet een belangrijk leermiddel kan zijn voor docenten in opleiding?

Voor leerlingen die moeite hebben om in de praktijk te reageren op situaties, kunnen ze via simSchool oefenen (4)

Je kan extra oefenen zonder een echte klas voor je te hebben (4). Echter zal een simulatie nooit te vergelijken zijn met de werkelijkheid (2)

Het laat je zien hoeveel en verschillende reacties er binnen de les nodig zijn en wat men nodig heeft een klas draaiende te houden (4)

Het lijkt minder op de realiteit (2)

Het is wel leerzaam wat positieve of negatieve reacties doen (4) (5)

Ik denk dat het belangrijk kan zijn als je situaties van de praktijk kan koppelen aan de simSchool (2). Dit kan je dan bespreken en hoe je handelt (7)

Je kunt er als docent in opleiding wel wat uithalen, maar het werkt totaal anders als in de praktijk (2)

Het kan belangrijk worden als het lijkt op onze lesgeef manier (2) (9)

Beter onderwijs komt niet door meetbaarder onderwijs, maar door meer inzicht en didactische kennis (5)

Het is misschien voor leerjaar 1 wel bruikbaar (4) dan kun je zien dat je met positiviteit meer bereikt (5)

Je kunt op deze manier thuis of samen met leerkrachten (7) oefenen en inspelen op bijzondere situaties in de klas (4)

Je kent de leerlingen niet, je kunt wel een beetje inzien maar het is heel nep (2)

Het sluit niet aan bij de werkelijkheid (2)

20. Wat moet er anders zijn in de nieuwe simulatie om een belangrijk leermiddel te zijn voor docenten in opleiding?

Dat je de praktijk voorbeelden kan toevoegen in de simSchool (2). Zodat je het daar samen over kan hebben (7)

Tijdens de les een "eind" grafiek bekijken (5)

De taken en reacties van leerlingen kunnen reeeler zijn (2)

Eigen antwoorden kunnen geven (8)

Het leersysteem moet hetzelfde zijn (9)

Het moet echt zijn (2)

Het moet leuk zijn om te doen (6)

Ik zou het niet doen (3)

Nederlands talig (1)

Zelf keuzes maken in wat je zegt (8)

Ik zou het heel belangrijk vinden als alles in het Nederlands wordt gemaakt (1)

Meer tot de werkelijkheid aansluiten (2)

Meer aansluiting tot de werkelijkheid (2)
Dat ze voor de nieuwe simulatie een Nederlands programma
(1)

21.Wat vind je belangrijke kenmerken in een simulatie?

Dat het in werkelijkheid ook kan (2)

Moet aansluiten op de belevingswereld (2)

Past bij de werkelijkheid! (2)

Verschillende reacties (4)/taken (8)
Minder vragen/leerverschillen
(4)

Verschillende kinderen (8)

Dat je gedrag kan observeren en daar op kan reageren (5). Het is alleen jammer dat je je eigen reactie niet kan invullen (8)

De taken (8)

Houding van de kinderen (1)

De statistieken (5)

Dat je je handelen kunt verbeteren (5)

Overzichtelijk (3)

Gericht op deeltaken (8)

Leuk getekend (3)

Goed uitgebreid (soms iets te) (3)

Wel veel keuzes in wat je kan zeggen, maar niet altijd wat je wilde zeggen (4)
Duidelijkheid en goede feedback door de grafieken en tabellen na de les
(5)

Feedback (7)

Samenwerking (7)

Feedback (7)

Samenwerking tussen leerkrachten (7)