MASTER THESIS

USING THE TABLET PC FOR EDUCATION? THE ADOPTION PROCESS OF PRIMARY SCHOOLS AND CHILDREN'S ACCEPTANCE.

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Contents

Abstract

To support primary schools in making the financial and pedagogical decision of implementing the tablet PC in school, this research investigates the adoption process of primary schools, and the acceptance of the tablet PC by children. Two tablet PC's are studied: a closed tablet system which has a fixed software program, and an open tablet system that can be changed to the child's preferences. To examine the adoption process, interviews are held with teachers and directors. The acceptance of the tablet PC by children is measured by a conceptual research model including TAM, UTAUT, and findings from the literature regarding usage. Results of the interviews and questionnaire indicate that primary schools and children have a positive attitude towards using the tablet PC for education. It appeared children's attitude is influenced by perceived usefulness, perceived ease of use, and independency. The importance of variables differs between the two tablet PC's, because of the features and usage of the tablet PC. When analysing both studies the needs of schools and children can be satisfied by combining the open structure with the educational program. Therefore, it is advisable for publishers of educational books to keep abreast of times by developing apps that connect to their educational method.

Samenvatting

Om basisscholen te ondersteunen in de financiële en pedagogische keuze betreffende de implementatie van de tablet op school, verdiept dit onderzoek zich in het adoptie proces van basisscholen, en de acceptatie van de tablet door kinderen. Twee tablets worden bestudeerd: scholen die gebruikmaken van een gesloten tablet systeem met een vast software programma, en scholen die gebruikmaken van een open tablet systeem dat aangepast kan worden aan de voorkeur van het kind. Het adoptieproces wordt bestudeerd door het houden van interviews met leraren en directeuren. De acceptatie van de tablet door kinderen wordt gemeten door een conceptueel onderzoeksmodel, waarvoor theorieën zoals TAM, UTAUT en bevindingen vanuit de literatuur worden gebruikt. De resultaten van de interviews en vragenlijsten gaven aan dat basischolen en kinderen een positieve houding hebben tegenover het gebruik van de tablet voor educatie. Het bleek dat de houding van kinderen tegenover de tablet beïnvloed wordt door het nut van de tablet, gebruiksgemak en zelfstandigheid. De belangrijkheid van variabelen verschilt tussen de twee tablets, dit komt door het verschil in kenmerken en het gebruik van de tablet. Op basis van beide studies kan de behoefte van scholen en kinderen worden voldaan door het combineren van de open structuur met het educatieve programma. Daarom is het adviseerbaar voor uitgevers van educatieve boeken om apps te ontwikkelen naast de reguliere methodes.

1 Introduction

Since information and communication technologies (ICT) contribute to efficient, effective and more appealing teaching, over the past few years, the usage of ICT for education became obvious (Brummel & Amerongen, 2011). Schools adopted computers for teaching and according to Brummel and Amerongen (2011) for on average five students one computer is at their disposal in school. However, the differences between schools is considerably, the amount of computers varies between the zero and ten students per computer (Brummel & Amerongen, 2011). In addition to the computer, the integration of the interactive whiteboard instead of the traditional chalkboard made a fast growth (Brummel & Amerongen, 2011). Almost every school owns one or more interactive whiteboards (Brummel & Amerongen, 2011). An interactive whiteboard is a large touch sensitive board which is used for teaching and learning, the board is connected to a digital projector and a computer (Becta, 2003). The implementation of the computer and the whiteboard emphasize that schools are using more and more technology for education. At the moment schools face the decision of using the tablet PC instead of textbooks and exercise books for education. The common objective of schools for using the tablet PC in education is preparing children for work and life in the 21st century (Clarke, Svanaes, Zimmermann, & Crowther, 2013).

Before one can examine the adoption and acceptance of the tablet PC, one needs to understand what kind of device the tablet PC is. The tablet PC is introduced in 2002 and is a laptop without a keyboard, but with a stylus used on the screen, however there is an option to attach a keyboard or mouse (Gill, 2007). The advantages of the tablet PC include its weight, the long battery life and not being too expensive (Gill, 2007). The disadvantages are not having a CD-ROM drive, the slow processor and fewer amounts of ports (Gill, 2007). The tablets portability and the easiness of taking notes makes the tablet PC interesting in industries such as healthcare, government, construction, and the education sector (El-Gayar, Moran, & Hawkes, 2011). With regard to the education sector the two most important features of the tablet PC are its wireless connection and annotation (Fister & McCarthy, 2008). With the wireless connection information can be shared and the annotation makes it possible to write on almost any document (Fister & McCarthy, 2008).

According to a research of 'Stichting Mijn Kind Online' (2013) in the Netherlands the adoption of the tablet PC increases rapidly. In 2012 one out of three families owned a tablet PC, in 2013 this increased to two out of three (Stiching Mijn Kind Online, 2013). Furthermore, approximately 50 percent of the children between three and seven years play frequently with the iPad (Stiching Mijn Kind Online, 2013). Besides, the adoption of tablet PC's in households, schools implement the tablet PC in class. In august 2013 six schools changed into Steve Job schools, some gradually changed, other schools implement the new concept immediately (O4NT, 2013). A Steve Job school is an educational environment where children use an iPad instead of textbooks and exercise books, thereby children are not bounded to traditional school times (O4NT, 2013). Nevertheless, parents respond diverse to these changes, some parents take their children in advance from school and are angry (Hoek, 2013). Research acknowledges negative experiences, but this is mainly regarding the tablet PC's features like, short battery life, lack of screen brightness or damaging the tablet PC (Ifenthaler & Schweinbenz, 2013;Twining et al., 2005)

However, there are also positive reactions of using the tablet PC for educational purposes. When using the tablet PC schools mention an increase in children's or students' motivation to learn (Clarke & Svanaes, 2012; Iwayama, Akiyama, Tanaka, Tamura, & Ishigaki, 2004; Li, Pow, Wong, & Fung, 2010; Twining et al., 2005) While experiences with the tablet PC are negative and positive, the majority of countries in the world are adopting online teaching and learning (Dichev, Dicheva, Agre, & Angelova, 2013). An example, in South-Korea the Minister of Education decided to replace all notebooks and adopt the tablet PC by 2014 in primary schools, and expand in 2015 to secondary and high schools (Eason, 2011; Dichev et al., 2013; Straits Times Indonesia, 2011).

In the Netherlands various schools started with using the tablet PC in class. At the moment several primary schools in the area of Den Bosch started a pilot of introducing tablet PCs in class. Instead of using books and notebooks schools use a tablet PC. Two different types of table PC's are available. First, there is a tablet PC with an open system, like the iPad. Second, there is one with a closed system called Snappet. The open tablet system allows users to adjust the tablet PC to their preferences with,

for instance apps. The closed tablet system has a fixed format with a software program that cannot be changed. This study investigates the adoption and acceptance of the two tablet PC's.

Insight is given in how teachers and directors experience the tablet PC for educational usage and therefore contributes to the body of knowledge regarding the adoption of the tablet PC by primary schools. This information can help other schools to make the decision of using tablet PC's, but also gives perspective to the makers of tablet PC's and apps for education regarding the needs of schools. Furthermore, the acceptance of the tablet PC by children is explored. Next to this, the difference between the two tablet PC's on acceptance is examined. Schools are standing at the beginning of this new phenomenon and have to make pedagogical and financial considerations. Therefore it is important to know why a certain tablet PC is adopted for education and to what degree the tablet PC is accepted by children.

Three research questions are addressed in this paper: (1) How do primary schools go through the adoption process of the tablet PC for educational use? And, (2) which factors influence children's acceptance of the tablet PC in class? Subsequently, (3) the differences between the open and closed tablet PC system on acceptance are analyzed.

To answer these three research questions two studies are conducted. The first study gives answer to the first research question regarding the adoption process of the tablet PC in primary schools. By means of interviews with questions based on the diffusion of innovation theory and variables of the model of Frambach and Schilleweart (2002), the first research question is answered. A second quantitative study with questionnaires is performed to give an answer to the second and third research question regarding acceptance. For the second study a conceptual model is created by means of TAM, UTAUT, and additional findings from the literature.

2 Theoretical framework

2.1 First study: Adoption process

With regard to the first research question, the process to adopt a new technology can be explained by Rogers' (2003) Diffusion of Innovation Theory and the conceptual framework of organisational innovation adoption by Frambach and Schilleweart (2002).

2.1.1 Diffusion of innovation theory

According to Rogers' (2003) an innovation is not adopted by individuals in a social system at the same time, adoption happens over a time sequence. There are five stages when making the adoption decision, the first stage is knowledge of an innovation, then an attitude towards the innovation is formed and this leads to the decision to adopt or not adopt, the fourth stage is implementation, and the fifth is confirmation of the decision (Rogers, 2003).

In the knowledge stage an individual reduces uncertainty about the advantages and disadvantages by asking questions like 'what is the innovation' and 'how and why does it work' (Rogers, 2003). According to Rogers (2003) there are three types of knowledge, namely (1) awareness-knowledge which represents the existence of an innovation. Then there is (2) how-to-knowledge emphasizing on how the innovation is used, and last (3) principles-knowledge concerning the functioning of the innovation.

When the persuasion stage occurs the individual seeks actively for information and forms a positive or negative attitude towards the innovation (Rogers, 2003). In the decision stage the individual makes the decision to adopt or reject the innovation (Rogers, 2003). The decision to adopt an innovation is made more quickly when the innovation is on trial basis (Rogers, 2003). Thereby, support for usage and social influence play a positive role in consumers' intention to adopt an innovation (Kulviwat, Bruner, & Al-Shuridah, 2009). Adoption is even stronger when an innovation is publicly consumed instead of privately (Kulviwat et al., 2009). When an individual decides to reject an innovation, there are two types of rejection 'active rejection' and 'passive rejection' (Rogers, 2003). With active rejection the

individual thinks about adopting the innovation but decides not to adopt it (Rogers, 2003). Individuals that passively reject an innovation never considered adopting the innovation (Rogers, 2003).

When individuals decide to adopt a new idea, the innovativeness of a person is a criteria for categorizing adopters into one of the five adopter categories (Rogers, 1995). The first adopter category is called innovators, the second one refers to early adopters, the third one to the early majority, the fourth to the late majority, and the last category includes laggards (Rogers, 1995). Innovativeness defines the degree of adapting a new idea earlier than others in the social system (Rogers, 1995).

In the implementation stage the innovation is put into practice and therefore problems can arise in this stage, so technical support might be needed (Rogers, 2003). A closer look is taken at the implementation phase, because this is the phase where problems could arise and the advantages and disadvantages of the tablet PC are revealed. This can help to understand the importance of the tablet PC, and needs for education.

The adoption of the tablet PC in an organisation is analyzed by Garfield (2005) who researched four industries in a three-month trial. This revealed that in order to support a successful tablet PC adoption the technical and operational issues like security of the wireless communication and providing training should be in order, thereby managers of the organisation should provide vision and support for usage (Garfield, 2006).

Besides how the tablet PC can be integrated successfully in school, how do schools experience using the tablet PC for education? The experience of schools with using the tablet PC reveals several advantages. The usage of the tablet PC is investigated in a pilot project of 12 primary schools in England by Twining et al. (2005). An increase in students' motivation was found (Clarke & Svanaes, 2012; Li et al., 2010; Twining et al., 2005) and also the concentration, communication skills, self esteem, research and recoding skills improved of students (Twining et al., 2005). Additionally, users get used easily to the tablet PC, it felt very natural and intuitive (Twining et al., 2005). In fact, Couse and Chen (2010) confirm that children in northeastern United States were easily used to the stylus of the tablet PC. Actually, children's writing and drawing quality was comparable with pen and paper

(Couse & Chen, 2010). As a matter of fact, children in the study of Couse and Chen (2010) preferred to work with a tablet PC instead of using the traditional drawing media. Another advantage for students is the possibility of writing questions to the teacher anonymously (Petty & Gunawardena, 2007).

The usage of a tablet PC is not only beneficial for regular students' but supports also students' with a disability. According to Eden and Heiman (2011) for both students' with and without learning disabilities, computer mediated communication (CMC) is an appropriate mean to communicate. CMC is a communication means to transmit social messages among students'. Especially for students' that suffer from social and emotional shortcomings, and often receive lack of support, CMC usage improves these shortcomings (Eden & Heiman, 2011). For instance, children with reading difficulties experienced support from the iPad (Gasparini & Culén, 2012). But no good reason can be given for using the iPad over the computer or the other way around for achieving academic goals by children with developmental disabilities (Arthanat & Curtin, 2013).

In addition to the increased motivation of students', the tablet PC was also motivational for teachers (Twining et al., 2005). The teacher can, for instance, provide immediate feedback to misconceptions of students (Koile & Singer, 2006). Thereby, teachers experienced that a tablet PC with a wireless data projector worked better than having a computer or laptop with an interactive white board (Twining et al., 2005). Overall it was found that because of the tablet PC schools use more ICT in the curriculum (Twining et al., 2005).

Besides the positive experiences with the tablet PC there are also disadvantages. A downside of the tablet PC are the musculoskeletal and visual discomfort like back pain and tired eyes, but also the dying battery during school time (Sommerich, Ward, Sikdar, Payne, & Herman 2007). Thereby, when there were technical failures it created frustration and reduced enthusiasm (Twining et al., 2005). Additionally, according to Hulls (2005) using a tablet PC does not have a significant impact on the quality of the course that is offered by means of course grades and teachers experience.

After the implementation stage later adoption or discontinuance can happen, this is the last stage of the diffusion of innovation theory, called confirmation stage (Rogers, 2003). First the individual seeks reinforcement for his or her decision but conflicted messages can reverse the decision (Rogers, 2003). The individual will seek for supportive messages in order to prevent dissonance from occurring (Rogers, 2003). However, when dissonance does occur an individual can stop using the innovation which is called discontinuance (Rogers, 2003). There are two types of discontinuance namely replacement discontinuance implying that the innovation is replaced for a better one (Rogers, 2003). The second type includes, disenchantment discontinuance meaning that the innovation is replaced because it did not satisfy the individuals needs (Rogers, 2003).

2.1.2 Conceptual framework Frambach and Schilleweart

Besides Rogers' Diffusion of Innovation Theory, the decision to adopt an innovation in an organisation can be explained by the model of Frambach and Schilleweart. According to Frambach and Schilleweart (2002) the adoption decision is made at two levels, the organisational level and trough the individual within an organisation. The adoption decision at an organisational level is directly influenced by the 'perceived characteristics of the innovation' which is at the heart of the model. According to Rogers (1995) the perception of an innovation by individuals affects their evaluation and decision to adopt, examples of characteristics include compatibility, complexibility, obeservability, and trialability. Thereby, adoption is directly influenced by the 'adopter characteristics' (Frambach & Schilleweart, 2002). To illustrate, the size of an organisation in correlation with other variables like structure, strategy, and culture are characteristics influencing the adoption decision (Frambach & Schilleweart, 2002). Actually, for adopting cloud computing, size but also trialability, compatibility, and relative advantage were found influential (Alshamaila, Papagiannidis, & Li, 2013)

In addition, the external variables 'adopter's environment', 'social network' and 'supplier of the innovation' influence the adopters' process (Frambach & Schilleweart, 2002). The influence of the adopters' environment can, for instance, be derived from another company that previously adopted the innovation or from competitive pressure (Frambach & Schilleweart, 2002). Regarding social influence, the rate and speed of innovation adoption can be enhanced with the frequency and richness

of communication between members of a social network (Lind & Zmud, 1991). Last, the supplier of the innovation can influence the probability of an innovation being adopted by organisations (Frambach, Barkema, Nooteboom, & Wedel, 1998). Examples of supplier activities are targeting to a specific group, communicating to create awareness and influence perception, and last reducing the financial, implementing or operational risks (Frambach & Schilleweart, 2002). This is supported by research of Alshamaila et al. (2013) where supplier effort and also top management support was found influential for the adoption of cloud computing services.

2.2 Second study: Acceptance

2.2.1 Acceptance models

The second research question of this study predicts the acceptance of an innovation. Organisational innovations are not useful when the intended target group does not accept the innovation. User acceptance of an innovation can be explained by the Technology Acceptance Model (TAM) (Davis, 1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh Morris, Davis, & Davis, 2003). The UTAUT model is a combination of eight models that includes the TAM and Diffusion of Innovation Theory.

Both TAM and UTAUT have been applied to study the tablet PC in education from various perspectives like understanding students' usage of the tablet PC (El-Gayar & Moran, 2007), change of ecology in the classroom (Culén & Gasparini, 2011) and the acceptance of the tablet PC among teachers (Ifenthaler & Schweinbenz, 2013). Therefore, the acceptance of the tablet PC by children can be explained by the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT).

2.2.2 Determinant for acceptance

There are diverse research results about the most dominant determinant for the acceptance of the tablet PC. A study applied at a higher education business faculty in the Unites States discovered that when using UTAUT performance expectancy and voluntariness are the most salient drivers for acceptance of the tablet PC (Anderson, Schwager, & Kerns, 2006). On the contrary, studies with students from a public university in the United States found attitude as the most influential determinant, followed by

performance expectancy, facilitating conditions, effort expectancy, and social influence (El-Gayar et al., 2011; El-Gayar & Moran, 2006). After all, the study of El-Gayer et al. (2011) is a more recent study than that of Anderson et al. (2006), and so attitude is expected to be a more dominant determinant for tablet PC acceptance than performance expectancy and voluntariness.

In addition to the recentness of El-Gayer et al. (2011) study, the attitude towards using the product is in TAM an influential determinant for acceptance (El-Gayar & Moran, 2007). Besides TAM, attitude is in the Theory of Reasoned Action and Theory of Planned Behavior an important determinant for behavioral intention. Attitude is defined as "a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (Eagly & Chaiken, 1993, p. 1).

Along with the recentness of the study and the three models, studies regarding students' attitude in context of education discovered that a positive attitude increases using a multimedia-based learning system. This holds using, for instance, an interactive application or movies for learning (Lee & Ryu, 2013). Likewise, students' intention to accept virtual learning systems can be predicted by attitude (Sumak, Polancic & Hericko, 2010) and students' attitude towards technology is a leading determinant of using technology for learning (Culén and Gasparini, 2011; Lai, Wang, & Lei, 2012). Besides, studies on attitude and learning, a study with high school students of midwest United States revealed that the attitude towards the tablet PC is generally positive (Sommerich et al., 2007). In conclusion, in this study the attitude towards using the tablet PC determines acceptance of the tablet PC.

2.2.3 Perceived usefulness and perceived ease of use as predictor for attitude

Attitude is determining acceptance, but which variable can influence the attitude towards the tablet PC? The study of El-Gayar and Moran (2007) indicate that it is reliable to investigate students' acceptance of the tablet PC with TAM. Perceived usefulness refers to "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p.320). Thereby, perceived usefulness determines the attitude and intention towards the tablet PC (El-Gayar & Moran, 2007).

Perceived ease of use is defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 320). Perceived ease of use predicts perceived

usefulness and they both predict significantly the attitude of the tablet PC or mobile device (Bruner & Kumar, 2005; El-Gayar & Moran, 2007). According to Ben Allouch (2008) TAM is often used in situations in which people use the technology or in demonstrations or training sessions where users use the technology for a short time. Likewise, schools participating in this research use the tablet PC for a short time. For these reasons, TAM is used to predict tablet PC acceptance. So, perceived usefulness and perceived ease of use are included in the model as a potential significant predictor for attitude. Thereby, perceived ease of use influences perceived usefulness. Therefore, the following hypotheses are formulated.

H1: Perceived usefulness positively influences the attitude towards using the tablet PC.

H2a: Perceived ease of use positively influences the attitude towards using the tablet PC.

H2b: Perceived ease of use positively influences perceived usefulness.

2.2.4 Social influence as predictor for attitude

This research furthermore hypothesizes that support from peers and teachers positively influence the attitude towards the tablet PC. Confirmation of the positive influence on attitude can be found in the article of Lai et al. (2012) who reveal that support from peers and teachers predicts usage. In addition, research of Garflield (2006) confirms that when managers support usage of the tablet PC in the organisation the support influences successful adoption of the tablet PC. And finally, when applying the UTAUT model social influence does not have a large contribution, but is a predictor for acceptance of the tablet PC (El-Gayar & Moran, 2006; Moran, Hawkes, & El Gayar, 2010).

H3: Social influence positively influences the attitude towards using the tablet PC.

2.2.5 Experience as predictor for attitude

The next hypothesis assumes that understanding of how to use the tablet PC, therefore having experience with the tablet PC influences children's attitude towards using the tablet PC. In fact, research of Moran et al. (2010) applied the UTAUT model and affirms that experience with a computer influences the acceptance of the tablet PC. Other studies confirm the importance of prior experience when using IT (Taylor &Todd, 1995), or the internet (Gardner & Amoroso, 2004).

Furthermore, the article of Sommerich et al. (2007) suggests that a positive attitude is associated with the understanding of how to use the tablet PC, in other words having experience influences attitude.

H4: Experience with a tablet PC positively influences the attitude towards using the tablet PC.

2.2.6 Independency as predictor for attitude

Another essential point regarding usage, when children become familiar with the tablet PC their independency increased and there was less instruction and assistant needed from an adult (Couse & Chen, 2010). Even when the amount of technical accidents increased their independency remained and children were seldom frustrated (Couse & Chen, 2010). Thereby, according to Clarke and Svanaes (2012) children who were using the tablet PC felt confident and independent. Additionally, children perceived the tablet PC as motivating because it is fun and enjoyable, but also because it caused change in their everyday school life they could, for instance, work more independently (Clarke & Svanaes, 2012). Thus, independency is included in as a significant predictor in the theoretical model.

H5: Independency positively influences the attitude towards using the tablet PC.

2.2.7 Interest as predictor for attitude

Another usage benefit analyzed by Koile and Singer (2006) is the focus and attention that increases when students use the tablet PC. Likewise, children's motivation to learn is enhanced by using the tablet PC (Iwayama et al., 2004; Li et al., 2010). The increase of focus, attention, and motivation is applicable to the tablet PC and therefore the interest in the task. Actually, children aged three till six years showed a higher interest in the task and this interest of children with the tablet PC increased with age (Couse & Chen, 2010). For these reasons it is assumed that the interest in the task increases the attitude towards the tablet PC. This implies that the more positive the child is towards the task the more positive the attitude of the child towards the tablet PC.

H6: The interest in the task positively influences the attitude towards using the tablet PC.

2.3 Conceptual research model

Based on the posed hypotheses a conceptual model is created. The model describes the relationship between six independent variables (perceived usefulness, perceived ease of use, social influence, experience, independency, and interest in the task) and the dependent variable (attitude towards using the tablet PC). The model is tested at the participating schools. In addition, the model is separately tested on the closed and open tablet schools.

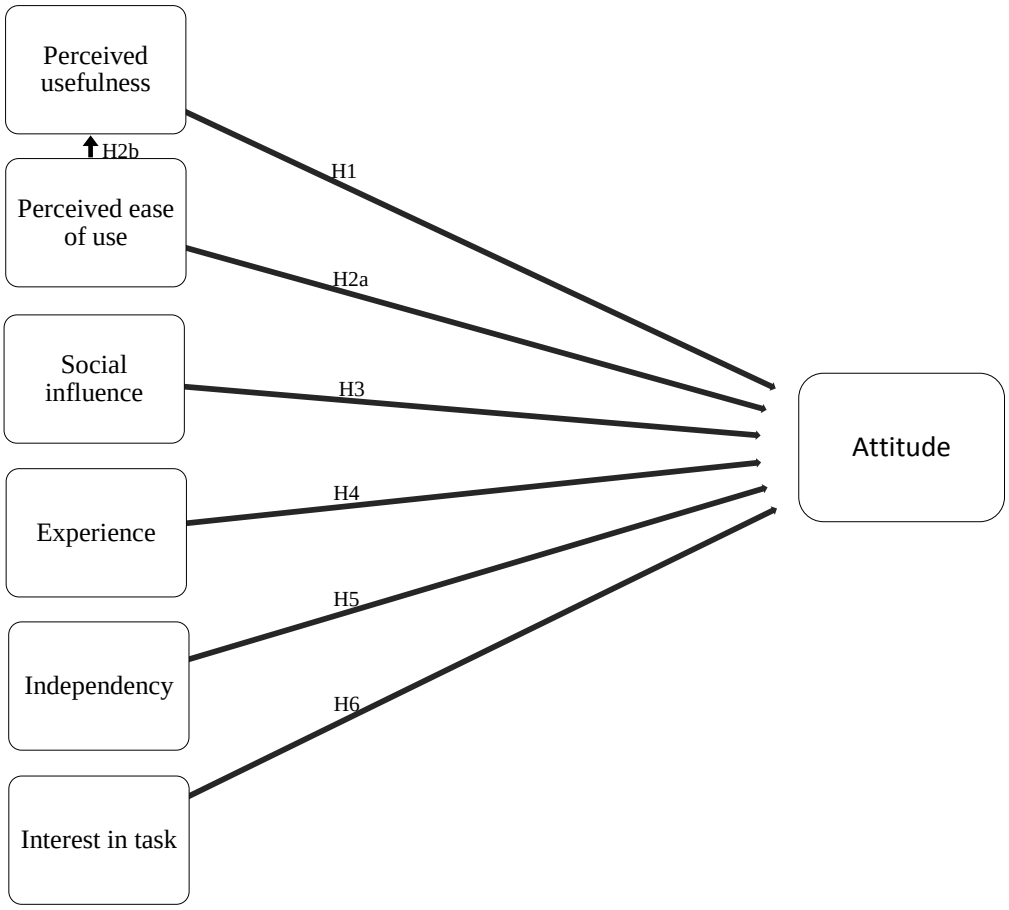

Figure 1 conceptual model of influencing factors for attitude.

3 Study 1

3.1 Method

The purpose of the interviews is to investigate how primary schools go through the adoption process of using the tablet PC for education. In this section the sample is reviewed, and a closer look is taken at the measures used for establishing the interviews. At last, insight is giving concerning the procedures of executing the interviews. The interviews are analysed with software programme ATLAS.ti 7.

3.1.1 Sample

First the characteristics of the school are reviewed and then the characteristics of the participants. The characteristics of the sample are illustrated in Table 1. There are six primary schools in the area of Den Bosch that take part in the study. These six schools have a different educational model, there are four Roman Catholic schools, one school applies the wittering concept and one school provides generally accessible education (fusion of Nut school with public school). The size of schools differ from 195 students to schools with 700 students with on average 23.8 (SD = 1.63) children in one class. At the schools with a closed tablet system every child has a tablet PC that belongs to him or her. The schools using an open tablet system have various amounts of tablet PC's in class. One school has one tablet PC per two children. Another school has around 30 tablet PC's in total with in every class one tablet PC and some classes have more. Yet another school has ten tablet PC's that circulate. So the schools have varying amounts of tablet PC's, the minimum amount is ten and the maximum is 80. On average, schools have 41, 1 (SD = 25, 1) tablet PC's.

For each primary school, the director (N = 5; 4 male and 1 female) and teacher are interviewed (N = 6; 6 female) except for one primary school. Here one person is interviewed because there was a transition of directors, therefore at that time there was no director. The participant of the school made the decision to use the iPad in school and is teacher and head of the ICT management. Only teachers who used the tablet PC were interviewed, this was on voluntary basis. The average age of the interviewees was 44, 8 (SD = 12, 7).

Table 1
Sample characteristics

Demographics	Categories	Frequency	Percent
Educational model	Roman Catholic	4	66.67%
	The Wittering concept	1	16.67%
	General accessible education	1	16.67%
Size school	<200	1	16.67%
	201-300	2	33.33%
	301-400	1	16.67%
	> 401	2	33.33%
Tablet PC's	< 25	1	16.67%
	26-40	2	33.33%
	41-55	2	33.33%
	>56	1	16.67%
Gender	Male	4	36.36%
	Female	7	63.64%
Age	20-30	1	9.09%
	31-40	4	36.36%
	41-50	1	9.09%
	51-60	5	45.45%

3.1.2 Measures

A semi structured interview is conducted with questions based on the Diffusion of Innovation Theory of Rogers (2003). In specific, questions about the knowledge phase, how individuals got in touch and gained understanding of the tablet PC are acquired. In the persuasion phase the attitude is formed and information is gained about the advantages and disadvantages. For the decision, implementation and confirmation phase information is retrieved about the decision to adopt or reject an innovation, how the implementation process went and if they want to continue with using the tablet PC for education.

Besides the questions regarding the phases of the Diffusion of Innovation Theory the questions in the semi structured interview are also based on the conceptual framework of Frambach and Schilleweart who explain the adoption decision at an organisational level. Questions are asked about the 'perceived characteristics' of the innovation and 'adopter characteristics' like the size of the school, innovativeness, religion, educational model, and amount of students. The external variables like 'adopter's environment' concern questions about the influence of others that already adopted the tablet PC, while the 'social network' involves questions about the degree of information that is shared

between colleagues. In addition, questions are addressed regarding the activities the supplier undertook to persuade schools for adopting the tablet PC for education.

A codebook is made to divide comments of respondents into categories, for instance in the knowledge phase, awareness of the tablet PC is questioned. When analysing the interviews in ATLAS.ti 7 the responses on, for instance, the awareness question are noted and categorized in groups. As a result, there are five categories of how respondents became aware of the tablet PC, the amount of respondents is counted per category. For every phase in the Diffusion of Innovation Theory an associated table in the text shows the codebook. The table displays the categories of the phase called codes, sub-codes for the answers of each code, definitions of the sub-codes, and last the number of participants belonging to each sub-code.

3.1.3 Procedure

Participants were selected and approached by email and phone. The subjects were told that the interview investigated the process of adopting and integrating the tablet PC at school. When approval for the interview and questionnaire for children was given an appointment was made with the teachers and directors. The interviews were held in a two week period and took place at the schools. Before the interview, permission was asked to audiotape the interview for data analysis. When consent was given the interview started with varying durations between the 10.09 and 47.03 minutes in length. An interview schedule provides the same questions to the interviewees, although follow up probes were used to ask for elaboration and clarify comments. The interview scheme is attached to appendix A. Before asking the questions belonging to an adoption phase the necessary explanation was given, for instance for the decision phase ‘now are we going to talk about how the decision was made to implement the tablet PC at school’.

3.2 Results study 1

The findings are presented according to the stages of Rogers (2003) diffusion of innovation theory. There are five stages: (1) knowledge, (2) persuasion, (3) decision, (4) implementation, and (5) confirmation. Thereby, questions are asked regarding the conceptual framework of Frambach and Schilleweart (2002).

3.2.1 Knowledge

In the knowledge stage the individual becomes aware of the tablet PC for educational purposes. To determine how directors and teachers came into contact with the tablet PC for education, this was asked in the interview. In addition to awareness the question why their interest in the tablet PC was triggered is asked. Table 2 shows an overview of the findings in the knowledge phase.

Table 2
Results knowledge phase

Code	Sub-code	Definition*	N
1. Knowledge			
1.1 Awareness knowledge	Board	An umbrella organisation for primary schools in s'Hertogenbosch. Twenty four primary schools are associated with this organisation.	5
	Director	Head of the primary school.	2
	Experiment	For an experiment at school each class used another device, for instance, one class used the iPad and another the Nintendo Ds.	2
	Media	Television,magazines,radio, newspapers.	1
	Children/internet	The children at school, and the internet.	1
1.2 Interest tablet PC	The future	Keeping abreast of times. Children already work or will work with these kinds of devices in the future.	4
	Motivation	Trough the tablet PC the motivation of children increases.	2
	Direct feedback	Teachers can give direct feedback to children with the tablet PC.	2
	Enlightenment teacher	Teachers have less administration work therefore teachers can focus on other subjects.	1
	No textbooks and exercise books	Instead of using textbooks and exercise books work can be made on the tablet PC.	1
	No interest	There is no interest in the tablet PC.	1
	Extra tool	We see the tablet PC as an extra tool in class.	2
	Computer shortage/ mobility	Needed more computers and mobility.	2
	User friendly	Everybody can work with the tablet PC.	1
	Working together	Children working with each other.	2

Note. *****see appendix B for the original quotes.

Awareness

The responses to this question reveal that the awareness of the closed tablet system was raised by the school board which organized a meeting for directors. At this meeting the Snappet organisation was invited and explained what they do *P2: 'At a meeting with directors, we have certain moments where we come together and at this meeting a speaker of Snappet was present and told us what they were doing'*. Most teachers were informed by their director and received a mail regarding their interest of taking part in the pilot.

The schools using an open tablet system were made aware of the tablet PC by various causes. One school heard about the tablet PC by the media and the board of ICT, another school was influenced by articles read on internet and children who already have tablet PC's at home *P11: 'through the children, almost all children have an iPad at home and some even have more than one iPad. This also has to do with the population of our school'*. The third school was having an experiment at school with devices like the Nintendo DS, but also the tablet PC.

Interest

The interest in the tablet PC was mainly aroused by the feeling that schools must keep abreast of times. Thereby, schools mention the importance of the tablet PC for motivating children. In specific, schools that use the closed tablet system were mainly interested by the tablet PC features. For instance, no textbooks and exercise books are needed and the tablet PC gives direct feedback to children. Teachers can give direct feedback since they have an overview on their tablet PC concerning the answers children gave on tasks. Thereby, teachers do not have to examine children's work one by one. This is done by the tablet PC, so this saves time. One director stated that his interest was not provoked, he was afraid that it was a digital method that you need to teach everyone at once instead of individually.

Schools that use the open tablet system are interested in the tablet PC because it can be used as an extra tool for education. One school had a shortage of computers and missed mobility. Children are making assignments on computers that are spread over the school, so the teacher had less control, this can be solved by the tablet PC. Another school found the user friendly features of the tablet PC appealing and the fact that children can easily work together with the tablet PC *P4: 'We also wanted children to work together. We do not want a digital board, we want children to help each other. We know children learn more from each other than from us, so when they play an app together they can improve, help and support each other, and this was the idea'*.

3.2.2 Persuasion

In the persuasion stage the respondent seeks actively for information. To find out which information sources were used, participants were asked that question. Thereby, in the persuasion stage the respondent forms a positive or negative attitude. Trough the perceived innovation characteristics of the model of Framebach and Schilleweart the pros and cons of the tablet PC were anticipated, which help to form an attitude. Table 3 shows an overview of the findings in the persuasion phase.

Table 3
Results persuasion phase

Code	Sub-code	Definition*	N
2.Persuasion			
2.1 Information sources	Information from Snappet	The information that Snappet gave, their meetings, website.	5
	ICT team of school	The ICT team of school informed the director.	1
	Internet	The internet is used as an informing source.	3
	Other people	Other people were an information source.	1
	Magazines, articles, consumentenbond	Information in magazines, articles and the consumentenbond.	4
	Super-board of ICT	An organisation that deals with the ICT in school.	2
2.2 Advantages	Direct feedback	Because of the overview on the tablet PC teachers can give direct feedback to children.	3
	Examine exercise work	Less correction work because of the tablet PC.	2
	Replacing textbooks and exercise books	Children do not need to work in their textbook and exercise book, the tablet PC replaces them.	1
	No advantages	Participant could not think of any advantages.	1
	No wires and small	The tablet PC does not have wires and is small.	1
	Individually or together	Using the tablet PC individually or together.	1
	A lot of possibilities	The tablet PC offers a lot of possibilities.	1
	User friendly	It is manageable and user-friendly.	2
	Class position	You do not stand with your back to the class.	1
	No computers	Children do not have to work on computers anymore.	1
2.3 Disadvantages	No disadvantages	Initially there are no disadvantages.	3
	Vulnerability	The tablet PC is vulnerable, for instance when it falls.	4
	Fine motoric	Children practice less motoric exercises.	1
	Differentiating	Differentiating between children with the tablet PC.	2
	No internet	Having no internet on the tablet PC.	1
	Financial	The costs are high.	1
	Possibilities	The possibilities of the tablet PC can be frightening.	1
	Flash	The software program flash.	1

Note. *see appendix B for the original quotes.

Information sources

The directors and teachers used various information sources. The schools that implemented the closed tablet system used mainly information provided by Snappet. The information meeting of Snappet was a great source and one person referred to the Snappet website. One director mentioned that he trusted his ICT team to inform him. The schools with an open tablet system used a greater variety of sources. The internet is mentioned by all schools as a source where a lot of information is available, but these

schools also refer to magazines, articles and the consumentenbond. In addition, one school gained information from other people and one school from the super-board of ICT.

Perceived innovation characteristics

The analysed results reveal that the schools using the closed tablet system point out as a main advantage the direct feedback that can be given to children *P7: 'I could also see directly if a child made a mistake so I can offer help. That is something I really like. As a teacher you can never be as fast as the computer program'.* Furthermore, teachers do not have to examine exercise work of children this is automatically done by the closed tablet system and saves time. One teacher mentioned the advantage of the tablet PC replacing textbooks and exercise books. And there was one person that did not yet see advantages of the closed tablet system on forehand.

A school with an open tablet system finds the fact that the tablet PC has no wires is small and can be used by one child or together an advantage. Thereby, the open tablet system offers a lot of teaching possibilities and as a teacher you do not stand with your back to the class *P4:'As a teacher you often stand with you back to the class, a regular board or a digiboard does not matter, you are with your back to the class. With the tablet pc you do no longer stand with your back to the class, you stand with your face to the class and on the board behind you it appears in big. Children do not need to walk to the front of the class anymore and can share quickly'.* Another advantage is that it can replace the computer so the structure in class can be remained.

In general, as a main disadvantage the vulnerability of the tablet PC is named. However, there are also two directors and a teacher who mention that on forehand there were no disadvantages of the tablet PC. The disadvantages become apparent when using the tablet PC in practice. Next to these disadvantages, schools working with the closed tablet system find the fine motoric exercises an uncertainty, as well as the differentiating possibilities *P7:'And also the difference in tempo, how that would be obviated, because one student is of course faster, this is the same with regular work, and the other is slower'.* Another shortcoming was the fact of having no internet and how to manage the financial aspect. For the open tablet system the endlessness of possibilities was frightening. Another disadvantage of the

Apple tablet was Flash. Several applications are built with Flash and with an Apple product these applications cannot be opened.

3.2.3 Decision

The decision to actually adopt or reject the innovation is made in the decision stage. Because all the schools adopted the tablet PC questions are asked regarding who were involved in the decision process. Thereby, the decisive factor to implement the tablet PC is questioned and how they lowered the risk of the innovation being disappointed. In these three questions the influence of supplier activities, the environment, and social network from the model of Frambach and Schilleweart are questioned. Table 4 shows an overview of the findings in the decision phase.

Table 4
Results decision phase

Code	Sub-code	Definition*	N
3. Decision			
3.1Involvement	ICT and director	The ICT person of school and director.	4
	Director involves teachers	The director also involves the teacher.	2
	One person	One person was involved.	1
	Voluntary	Using the tablet PC for educational purposes was voluntary.	11
3.2 Deciding factor	Replacement of computer	Replacing the computer for the tablet PC.	2
	Affordable	Because of the pilot using the tablet PC in class was affordable.	3
	Extra tool	An extra tool for educating children.	2
	The future	Children should be ready for the society.	1
3.3 Open/closed	Actively rejected	Schools actively rejected the other tablet PC.	8
	Passively rejected	The tablet PC was never considered as an option because it was not on the market.	3
3.4 Deciding	Financial	School cannot afford the other tablet PC.	2
	Development	The open tablet PC's are still in development not yet for educational purposes.	1
	Outline	It is not clear how the course material on the tablet PC is structured.	1
	Instead of normal work	Because the tablet PC is a replacement for work that normally would be done in textbooks and exercise books.	2
	Gloried answer book	The Snappet is a digital answer book.	3
	Vision	The tablet PC does not have a good vision.	1
	individual teaching/ differentiation	The school wants to work individually and the differentiating possibilities are too limited for that.	1
	Society	The tablet PC should function as the society and therefore it needs an open structure.	2
	Creative, critical	Teachers and children should be creative and critical to content.	1
	Goodness closed tablet system	Mentioning the goodness of the closed tablet system	1
3.5 Lower risk	Financially	The school board is financially responsible.	4
	No social influence	School did not have contact on forehand with other schools about adopting the tablet PC for educational purposes.	7
	Social influence	Yes there was contact with other schools.	3

	Parents no influence	Parent had no influence on the decision of using the tablet PC for educational purposes.	7
	Parents have influence	Parents had influence in the decision process.	1
	Training	There was a training at school about using the tablet PC.	7
	No training	There was no training at school.	3

Note. *see appendix B for the original quotes.

Involvement decision process

The involvement of people differed, but often the director and ICT person are discussing the options together, some directors also involve other teachers. At one school only the person of the management was involved, she also manages the ICT and now and then stands in front of class. In general, there was no top down influence from the board, schools participated voluntary.

Decisive factor

A decisive factor of using a tablet PC for education was the replacement of the computer *P3: You have to think ahead, you now have the computer in school but do you want to continue to work with the computer or are you going to do it differently.* One school noticed a computer shortage, another school questioned the fact of using a computer in the future, and thereby one school said that the tablet PC is cheaper than a computer. For the closed tablet system an important factor was financially, because schools could take part in a pilot. By giving schools the change to try the Snappet in a pilot, the decision is made easier and risks are lower. The schools with the open tablet system see it as an extra tool to teach and want to prepare children for the future.

The decisive factor between the type of tablet PC, the closed tablet system or open tablet system is also questioned. The schools have actively rejected the other tablet PC, so schools with an open tablet system actively rejected the closed tablet system, and the other way around. Besides active rejection the tablet PC is also passively rejected one school mentioned that the Snappet was in its early stages and barely on the market, so they never considered the Snappet as an option.

When comparing the closed tablet system to the open tablet system, some schools found buying tablet PC's too expensive and with the pilot of Snappet schools could afford a tablet PC. Additionally, the open tablet system is not developed for educational purposes only, like the closed tablet system, so with the open tablet system it is easier to lose control over what children do. Next to this, one school

that uses the closed tablet stated that with the open tablet system it is unclear how course material is structured. Thereby, open tablets are more used for giving children extra work, while the closed tablet system is instead of regular work like math, and bounded to the school method.

Whereas schools with an open tablet system find the closed tablet system too bounded to a method and say it is a 'glorified answer book'. The closed tablet system does not have a vision and does not take into account the 21st century skills *P4:'Of course you pay for the individual textbook per method, so that is financially covered and there is no paperwork anymore. But in terms of vision that is it, so it is little appealing to the 21st century skills. It is obviously user friendly for teachers, you do not have to make check up work and you see how many times sum four is incorrect, so you can rehearsal that the next day. But that is it'.* In addition, a school with an open tablet system said, it is hard to differentiate with the closed tablet system and education is whole class teaching instead of individually. One person stated that the open structure of the society is not visible in the closed tablet system while children should be learned how to use all the information available. Thereby, teachers and children should be stimulated to be creative and be critical to content and this cannot be done with a closed tablet system. However, one school also mentioned the goodness of the closed tablet system.

Lowering risks

For the schools taking part in a pilot the risk of adopting the tablet PC was lowered, because they took part in a pilot, meaning that the board of Signum was financially responsible. One school with an open system got a subsidy. Most of the teachers and directors did not have contact with others about the decision to implement the tablet PC in school, but there were three participants that made contact on forehand with other schools or teachers. Furthermore, parents did not have influence on the decision of implementing the tablet PC in class. Except for one school that asked permission from parents who are in the participation board of school and two teachers talked with each other about the tablet PC. To lower the risks most schools had training for their staff, but because of the user-friendliness character of the tablet PC a few schools did not provide training and found out how the tablet PC works on their own.

3.2.4 Implementation

In the implementation stage it was found out how the tablet PC is used, the kind of problems that arise, and the advantages and disadvantages of the tablet PC are noticeable. Overall the schools have a positive attitude towards working with the tablet PC except for one person that finds it disappointing because of the fixed system of the closed tablet. Table 5 shows an overview of the findings in the implementation phase.

Table 5
Results implementation phase

Code	Sub-code	Definition*	N
4Implementation			
4.1 Overall experience	Positive	The experience of working with the tablet PC is positive.	10
	Negative	The experience of working with the tablet PC is negative.	1
4.2 Usage	Math, grammar or language	The closed tablet system is used every day for the courses math, grammar or language.	5
	Comprehensive reading	Using the tablet PC for comprehensive reading.	1
	To replace or besides books	The tablet PC is often used to replace textbooks and exercise books but can also be used besides books.	4
	Extra work	The tablet PC is used as extra work after the regular work.	1
	An hour	On daily basis the tablet PC is used for an hour till an hour and a half.	5
	Group four	The tablet PC is only used in group four.	6
	Math, grammar or language	The open tablet system is used for the courses math, grammar or language.	5
	Additional courses	The tablet PC is also used for history and nature or geography or drawing.	5
	Besides or extra work	The tablet PC is used besides textbooks and exercise books but can also function as extra work.	5
	2,3 times a week	The tablet PC is used two or three times a week.	1
	Everyday	The tablet PC is used every day for one and a half hour.	1
	Used in all classes	The tablet PC is used in all classes.	5
4.3 Problems	Tablet PC does not work	The tablet PC does not work well.	6
	Storage	Experiencing difficulties regarding charging of the tablet PC's.	1
	Touch screen	The touch screen does not react well.	1
	Flash	The software programs flash does not work on the tablet PC.	1
	Log in information	Problems with the login of the tablet PC.	1
	No problems	There are no problems with the tablet PC.	2
4.4 Advantages	Enthusiasm	There is an increase in motivation when working with the tablet PC.	7
	Improvement of children with a problem	Children with a problem work better with a tablet PC than with textbooks and exercise books.	3
	Less correction work	There is less correction work.	3
	No switching	Children do not have to switch from their textbook to their exercise book.	1
	Process more work	Children can process more sums on the tablet PC	3
	Feedback children	Giving directly feedback to children.	2
	Connection cito	The level of children is linked to cito scores.	1
	Adapted extra assignments	Children receive extra assignments that are adapted to	1

		how they perform.	
	Parents involved	Parents can see the process of their child trough an log-in code	1
	Teachers enthusiasm	The enthusiasm of teachers.	1
	Expecting higher results	It is expected that the results will be higher.	1
	Mobility	The tablet PC can be taken everywhere.	1
	Involve parents	The parents are more involved trough Facebook.	1
	Share in class	Sharing study material with each other.	1
	Playfully learning	Children learn in a playful way.	1
	Working together	Children are working and learning from each other.	1
	Works easy	The tablet PC works easy.	1
4.5 Disadvantages	Keyboard	Children need to get used to using the keyboard and dragging items.	2
	Posture	Children's posture gives complains about their neck and back.	4
	Sun	When the sun shines children cannot see on their tablet PC.	2
	No internet	There is no internet on the tablet PC.	2
	Bounded	Every child has his own tablet PC that is bounded to him or her.	1
	Whole class teaching	Seeing the class as a whole and therefore teaching within a common framework.	1
	Less writing	Children write less because of the tablet PC.	1
	Dyslexia	Children with dyslexia find the tablet PC to small and have difficulties with the keyboard.	1
	Vulnerability	The tablet PC is vulnerable, for instance, when the table PC falls.	1
	Writing	You cannot write properly on a tablet PC.	1
	Conflict between children	There are conflicts between children because they both want to write on the tablet PC.	1
	Teacher	Teachers find it sometimes scary to use apps instead of the textbook and exercise book.	1
	Time investment	It costs the teacher time to use the tablet PC as a tool for education.	1

Note. *see appendix B for the original quotes.

Usage

The closed tablet system is used every day for math and grammar or language. One school uses the closed tablet system for comprehensive reading. Schools using the closed tablet system often replace their textbooks and exercise books for the tablet PC or use the tablet PC besides books. However, one school used the tablet PC for extra work. On a daily basis the closed tablet system is used for about an hour or some use it for about one and a half hour. The schools with a closed tablet system use their tablet PC only in group four.

The open tablet system is also used for math and language or grammar, but there are more possibilities, like using the tablet PC for classes as history, geography, nature or even drawing. The open tablet system is occasionally used to replace textbooks and exercise books, like with math, but

functions often for making extra assignments after the regular work is done. The duration of using the tablet PC varies, some use the tablet PC two or three times a week and some use it every day for one and a half hour. For the schools with the open tablet system, the tablet PC is often used in all classes.

Problems

There are several problems schools are confronted with when using the tablet PC for education. A main problem of the closed system was that the tablet PC did not work appropriately. This was often caused by the Wi-Fi connection. These problems are still there but not as often as in the beginning. Thereby, storage of the tablet PC was a problem, a box is needed and all the tablet PC's should be coupled to a charger which you have to decouple in the morning when you start your lesson, this is time consuming. Additionally, one teacher experienced that the touch screen stops working sometimes. For the open tablet system and then specifically the iPad, flash is still a problem because the apps build with flash do not work appropriately. Another school had in the beginning a problem with logging in, but this is solved. Even two persons who work with the open tablet system stated that they could not think of any problems.

Advantages

There are many advantages observed when using the tablet PC for education. The major advantage mentioned by teachers and directors was the enthusiasm of children *P9: The motivation of children is big, bigger than when you work with textbooks or exercise books. So that is an advantage but hard to measure, because you cannot measure how much more motivation there is, but you see this when looking at the children. The concentration, the interaction and how they cooperate*. Another advantage observed with children who find it difficult to concentrate or have, for instance, the Asperger syndrome, they work faster, can better concentrate, and are no longer behind the rest of the class anymore *P2: Moreover we see that the weakest children work through the whole program. That is nice to see, that does not happen in a regular math lesson.*

The schools working with the closed tablet system point out as main advantage, less correction work so teachers have more time to, for instance, prepare their lesson. Teachers mention additionally advantages, such as no switching between their textbook and exercise book, children processing more

work, and giving direct feedback to children *P7: I can never give direct feedback on the course material that children made as the tablet PC does. I now get to see immediately if something is good or wrong, and the children receive immediately the assignment back when they made it wrong*. Another advantage is that the scores of children are linked to the cito, thereby extra assignments are adapted to how the child performed the exercises. In addition, parents can get access via a log-in code to see how their child is scoring on the various subjects. Next to what teachers experience a director mentioned that the teachers are enthusiastic and he expects higher results from the children.

For the schools using an open tablet system advantages are the mobility of a tablet PC, for example the tablet PC can be taken outside where children make an assignment. One school mentions that children can easily share information in class. When children make a sum on their tablet PC they can share the result on the screen of the class. But also the communication with parents is easier, as a teacher you can make a photo of the children and share it on Facebook or Twitter. Parents are more involved and reacted positively on this *P4: I noticed for instance, we communicate with Facebook and we definitely need a tablet PC with that. Because when you are a teacher, you are busy with 25 infants but you were on the square and you take a picture and place it on Facebook. Then the parents see it and respond 'ooh that is nice to see you being outside', 'that is nice to see you sitting by the sandpit'. We received this year a lot of positive reactions from parents, 'it is nice that you use Facebook this is the first time that I have insight in education'.* Thereby, children can easily handle the tablet PC and learn in a playful way. Another advantage mentioned is working together, when children work on a tablet PC together this stimulates them and they can learn from each other.

Disadvantages

A disadvantage of the tablet PC in general is that children have to get used to the tablet PC by means of finding the letters on the keyboard, and dragging items. When analysing schools using the closed tablet system the largest disadvantage is the posture of children, they sometimes complain about their neck or back *P8: Yes we noticed that working on a tablet PC requires a new posture and then I mean only how they are sitting. Children sit in the most impossible manners behind their tablet PC this causes complains about their neck and back.* Also the sun can cause a problem because children cannot see on their tablet PC so

all curtains should be closed. Another disadvantage is that there is no access to the internet. The tablet PC needs an open structure and therefore internet. Another disadvantage is that the tablet PC is bounded to one person, so the tablet PC cannot be used together or be switched. One school does not want whole class teaching, meaning that the teacher sees the class as a whole and teaches in a common framework. However, this school wants to teach more individual and the closed tablet system forces to apply whole class teaching, which is a disadvantage. Thereby, children do not write anymore which is a logical follow up when using tablet PC's. This is a miss, because real writing will not be done by these children anymore, only typing. Children with dyslexia also experience difficulties regarding the size of the tablet PC which is too small. Thereby, remembering the words and finding the letters on the keyboard is a difficult combination, therefore they can work in their exercise book.

Schools that use the open tablet system mention disadvantages like the vulnerability of the tablet PC, thereby children cannot write properly on a tablet PC. Additionally, when children work together this can cause conflicts because they both want to type on the tablet PC. Besides these disadvantages for children, it is also difficult for teachers because they have to adapt their traditional way of working and this can be scary. Additionally, when using the tablet PC for education teachers have to make time to learn how to use the tablet PC.

3.2.5 Confirmation

In the confirmation stage an individual can proceed with the innovation or stop using the innovation. To find out if the participant wanted to go further with the tablet, each participant is asked if he or she has doubts regarding their choice, if yes, why and when not, why? Table 6 shows an overview of the findings in the confirmation phase.

Table 6
Results confirmation phase

Code	Sub-code	Definition*	N
5 Confirmation			
5.1 Future	Proceed	Continue to work with the tablet PC.	9
	Stop	Stop using the tablet PC.	2
	Doubt	Doubt about proceeding with the current tablet PC.	1
5.2 Financial reasons	Snappet to expensive	Snappet is too expensive.	3
	More tablet PC's	Prefer to have more tablet PC's.	2

Note. ***** see appendix B for the original quotes.

Decision to proceed or stop

Except for one school, all schools confirmed to proceed with the tablet PC and are satisfied with their choice concerning the open or closed system. The school that stops with the Snappet is not satisfied because whole class teaching remains and they want to teach more individually, thereby the costs were too high, so disenchantment discontinuance occurred. For the new school year they want to take part in a pilot with a tablet PC that has an open system. One director mentioned that he has doubts because of the closed system. It is promised by Snappet that this will be fixed by providing internet access. However, when this is not fixed a tablet PC with an open system becomes more appealing.

Not only the usage experience is a factor, but the financial picture is as well a deciding factor for schools. The decision to go further with the tablet PC depends, for instance on the price. Schools taking part in the pilot of Snappet have to pay this year, but these schools are hoping that Snappet comes up with a solution, because otherwise it will be too expensive. Especially schools with an open tablet system want more tablet PC's, but this is financially difficult.

4 Study 2

4.1 Method

4.1.1 Sample

The second study investigates the factors influencing the acceptance of the tablet PC in class by children, and the differences in acceptance between the two tablet PC's. To give an answer on these questions the same primary schools where the qualitative study was held also cooperated with the quantitative study. The quantitative study includes children from group four who use the closed tablet system Snappet, and children from group five who use the open tablet system like an iPad or Prowise tablet. Both groups receive a survey based on the hypothesized research model. The survey contains only demographic questions. The questionnaire is attached to appendix C.

In total 139 participants took part in the survey, the missing data of a person is replaced by the mean of the question. Therefore all participants are included in the analysis. The construct social influence

has the highest amount of missing data, namely sixteen participants did not answer all questions. Experience has the lowest amount of missing data which is null. Of the respondents, 53, 2% were females and 45, 3 % were male. The age of children is between the seven and eleven years with an average age of 8.4 years (SD= 0.95). The children that participated in the study have an average of 4.3 consoles at home (SD= 2.0). The most popular device is a computer, second the Nintendo Ds, third a tablet PC, and fourth Nintendo Wii.

4.1.2 Measures

To measure the acceptance of children with the tablet PC the proposed model is tested. The independent variables are perceived usefulness, perceived ease of use, support from peers and teachers, experience, interest in task and independency. The dependent variable is the attitude towards using the tablet PC. Because this research consists of young children who have just learned to read, the questionnaire should be understandable and simple. Studies often use a seven point Likert scale as answer category. However, when using a seven point Likert scale children have to choose between lots of answers. This could be too difficult and cause confusion and loss of concentration. Therefore, for this study a five point Likert scale is chosen. The questionnaire will take about ten till fifteen minutes. A Cronbach alpha at or above .7 is chosen, because according to Nunnally (1978) this is adequate. In Table 7 an overview of the Cronbach alpha of each construct is given.

Table 7
Cronbach alpha of the constructs

Constructs	**Items**	**Removed items**	**Cronbach alpha**
Attitude	4		.79
Perceived usefulness	6		.86
Perceived ease of use	6		.78
Social influence	8	1	.73
Independency	3		.69
Interest in the task	8		.85

Attitude (Cronbach alpha = .79)

The affective reaction towards using the tablet PC is measured with the four item scale proposed by Venkatesh et al. (2003). Example items include “Working with the tablet PC is fun” and “The tablet PC makes school work more interesting”.

Perceived usefulness (Cronbach alpha =.86)

Perceived usefulness was conceptualized trough six survey items and is measured with a scale proposed by Davis (1989). Example items are "Using the tablet PC can enable to accomplish tasks more quickly" and "Using the tablet PC can make it easier to do my tasks".

Perceived ease of use (Cronbach alpha = .78)

Perceived ease of use was conceptualized trough six survey items and is measured with a scale proposed by Davis (1989). Example items are "Learning to use the tablet PC is easy for me" and "I find the tablet PC easy to use".

Social influence (Cronbach alpha =.73)

Social influence is measured with the scale used in research of Lai et al. (2012) and is conceptualized trough eight survey items. In research of Lai et al. (2012) this scale is called facilitating conditions and measures the support from peers and teachers. For this study one item was deleted "I often get ideas from teachers on potential apps to use". Reason for exclusion of this item is because schools using the closed tablet system have fixed apps on the tablet PC which are especially composed for the Snappet. Therefore the question is not applicable for schools with a closed tablet system. Example items are "Peers share strategies in using the tablet PC for learning" and "My teacher encourages using the tablet PC for learning".

Experience

The experience of children with the tablet PC is conceptualized by asking if children have a tablet PC at home. A multiple choice question was used asking which devices children have at home. In total there were nine devices, thereby an "other" category was included. Experience is measured by counting the amount of children that marked tablet PC.

Independency (Cronbach alpha =.69)

Independency was conceptualized trough three survey items. Often independency is measured by observation for this study, however this was not possible. Therefore we created three items that measure in what degree children feel independent when using the tablet PC compared to using books. Are children less dependent on the teacher? Do they need less help, because of the tablet? The three items are "When making assignments on the tablet PC do you need less help from the teacher than when making assignments from the book?" and "Do you make more assignments when working with the tablet PC than when working in an exercise book?" and "Do you ask less questions to the teacher about the assignments when you work with a tablet PC?".

Interest in the task (Cronbach alpha =.85)

Interest in the task was conceptualized through eight survey items and is measured with the intrinsic satisfaction scale proposed by Duda and Nicholls (1992). This scale measures how satisfied or bored children are with schoolwork. There were tree negative worded questions, such as "At school, I'm usually bored" a positive worded question is "I usually enjoy learning at school".

4.1.3 Procedure

To explore the readability and comprehensibility of the survey a pre-test was conducted at two different schools. In each school, five children participated. As a result of the pre-test two constructs were deleted, because overall there were too many questions causing a loss of concentration. The first construct, performance expectancy was initially measured by the construct proposed by, Venkatesh et al. (2003) and six additional questions used in the research of Moran et al. (2010). But only the construct of Venkatesh et al. (2003) was chosen for the questionnaire, since this construct is used to measure behavioural intention in the UTAUT model, and is often used in acceptance studies (El-Gayar & Moran, 2007; El-Gayar et al., 2011; Ifenthaler & Schweinbenz, 2013). While the extra questions used in research of Moran et al. (2010) did not add enough extra value and made the questionnaire too long for children. In the end this construct is removed from the model because the questions were too much alike with perceived usefulness, therefore measuring the same. From the four questions of performance expectancy three questions measured exactly the same as perceived usefulness.

Additionally, for measuring social influence two constructs were used, social influence from Venkatesh et al. (2003) and facilitating conditions from Lai et al. (2012). Because the questions of Ventkatesh et al. (2003) were more difficult for children only the construct of Lai et al. (2012) are used in the questionnaire. Not only the difficulty of the question influenced this decision but also the questions of the constructs. The questions of Venkatesh et al. (2003) did not fit properly in the context of this study. Especially two questions were not suited because they questioned an influence children had nothing to do with, namely the influence of management and organisation. In contrast the questions of Lai, et al. (2012) were fitting the purpose of what this study wanted to know, namely the influence peers like classmates and teachers have on the attitude towards the tablet PC.

In order to acquire children that fill in the questionnaire the survey was distributed at school during school time. After an introduction of the researcher the survey was handed out to the children and they were allowed to ask questions when needed. The teachers of group four read out the survey while for children of group five this was different because children can read properly and the tempo of children is more diverse. So some teachers read out the questionnaire and children could work further if they liked, while some teachers did not read out the questionnaire. The results of the questionnaire were analysed with the software program IBM SPSS 20.

4.2 Results study 2

Overall the findings showed that the model had good analytical and explanatory power to explain the attitude of the tablet PC in education. There are three items recoded, namely the items from the interest scale. The mean values indicated that the participants are positive towards using the tablet PC. In particular the attitude (M= 4.44,SD= 0.73) and perceived ease of use (M= 4.20,SD= 0.59) showed very high average values. The means perceived usefulness (M= 3.89,SD= 0.82) and independency (M= 3.81,SD= 0.93) also show high average values. On the other hand, social influence (M= 3.46,SD= 0.74) and the interest in the task (M= 3.11,SD= 0.90) tended to be moderate. Additionally, most children have experience with the tablet, 67, 6 % of the children have a tablet PC at home. Table 8 provides a full description of the means and standard deviations.

Table 8
Means and standard deviation

	General (N=139)		**Closed system** (N=71)		**Open system** (N=68)	
	M	SD	M	SD	M	SD
Attitude	4.44	0.73	4.45	0.78	4.42	0.66
Using the tablet PC is a good idea.	4.56	0.73	4.54	0.83	4.59	0.63
The tablet PC makes work more interesting.	4.06	1.23	4.24	1.11	3.87	1.31
Working with the tablet PC is fun.	4.69	0.74	4.63	0.90	4.75	0.53
I like working with the tablet PC.	4.45	0.91	4.41	0.99	4.49	0.82
Perceived usefulness	3.89	0.82	4.05	0.79	3.72	0.84
Using the tablet PC can enable to accomplish tasks more quickly.	3.72	1.09	3.87	1.08	3.57	1.09
Using the tablet PC can improve my performance.	3.60	1.14	3.81	1.11	3.37	1.14
Using the tablet PC can make it easier to do my tasks.	4.31	0.98	4.46	0.92	4.15	1.01
Using the tablet PC in my job/school can increase my productivity.	4.02	1.13	4.30	1.01	3.74	1.19
Using the tablet PC can enhance my effectiveness.	3.41	1.11	3.52	1.08	3.28	1.14
I find the tablet PC useful in my job/school.	4.28	0.96	4.34	0.84	4.21	1.07
Perceived ease of use	4.20	0.59	4.02	0.59	4.39	0.53
Learning to use the tablet PC is easy for me.	4.37	0.81	4.32	0.87	4.43	0.74
I find it easy to get what I need from the tablet PC.	3.49	1.06	3.06	0.98	3.95	0.94
My interaction with the tablet PC is clear and understandable.	4.64	0.65	4.62	0.68	4.66	0.61
I find the tablet PC to be flexible to interact with.	4.21	0.85	3.90	0.88	4.53	0.68
It is easy for me to become skillful at using the tablet PC.	4.17	0.85	4.10	0.83	4.25	0.87
I find the tablet PC easy to use.	4.31	0.86	4.10	0.99	4.53	0.63
Social influence	3.46	0.74	3.74	0.56	3.17	0.80
Heard successful stories on using the tablet PC for learning from classmates.	3.27	1.26	3.65	1.17	2.87	1.23
Peers share useful information regarding the tablet PC.	3.99	1.02	4.42	0.79	3.53	1.04
Peers share strategies in using the tablet PC for learning.	2.96	1.30	2.87	1.29	3.06	1.33
Have friends to seek advice on using the tablet PC for learning.	3.28	1.16	3.48	1.09	3.07	1.20
Have friends from whom to seek technical help.	4.04	1.08	4.41	0.78	3.66	1.21
My teachers often use the tablet PC for learning.	3.36	1.41	3.68	1.39	3.02	1.37
My teacher encourages using the tablet PC for learning.	3.34	1.19	3.68	1.10	2.99	1.19
Independency	3.81	0.93	3.91	0.86	3.71	0.99
When making assignments on the tablet PC do you need less help from the teacher than when making assignments from the book?	3.86	1.20	3.77	1.22	3.92	1.18
Do you have fewer questions for the teacher when you make assignments on the tablet PC than when you make assignments from the book?	3.81	1.07	3.83	0.97	3.79	1.17
Do you make more assignments with a tablet PC than in an exercise book?	3.78	1.28	4.14	1.17	3.41	1.28
Interest task	3.11	0.90	3.38	0.93	2.83	0.79
I usually have fun doing schoolwork.	3.30	1.37	3.68	1.35	2.90	1.30

I usually enjoy learning at school.	3.51	1.30	3.87	1.33	3.13	1.17
I usually find school interesting.	3.24	1.31	3.48	1.30	3.00	1.29
I usually get involved in learning.	3.50	1.11	3.66	1.15	3.33	1.06
In school, I usually find time flies.	3.29	1.35	3.41	1.35	3.16	1.35
I often daydream instead of thinking about schoolwork.	2.65	1.15	2.97	1.17	2.32	1.03
At school, I'm usually bored.	3.07	1.27	3.34	1.32	2.80	1.17
I usually wish school would end quickly.	2.34	1.36	2.65	1.51	2.01	1.11

4.2.1 Predicting attitude towards the tablet PC

The hypothesized research model is tested by means of a multiple regression analysis. The constructs accounted for significant 48,0 % of the variance in attitude toward the tablet PC for educational usage (R^2= .48, F (6, 132)= 22.19, p < .001). This indicates that about half of the variance of a person's attitude toward the tablet PC is attributable to the six factors displayed in Figure 2.

From Table 9 we can conclude that social influence (H3), experience (H4) and interest in the task (H6) are not significantly contributing to explaining the variance in a person's attitude towards the tablet PC. The three remaining factors significantly influence the attitude towards the tablet PC. Perceived usefulness (β = .33, p < .001) and perceived ease of use (β = .26, p < .001) show the greatest effect of attitude towards the tablet PC, hence confirming hypotheses 1 and 2a. The results also reveal the important role of independency (β = .25, p < .01) as predictor, thereby confirming hypothesis 5.

Table 9
Predictors of attitude (N=139)

Independent variable	**β**
Perceived usefulness	.33***
Perceived ease of use	.26***
Social influence	.003
Experience	-.01
Independency	.25**
Interest task	.02
Adjusted R^2	.48
F	22.19

Note. *p<.05; **p < .01; ***p < .001

According to the model in Figure 1, perceived ease of use influences perceived usefulness. Table 10 shows that the adjusted R^2 had a value of .28 ($F(1, 137) = 55.05$, $p < .001$). This indicates that 28, 0% of the variance in perceived usefulness of the tablet PC is explained by the perceived ease of use. Perceived ease of use significantly supported perceived usefulness ($\beta = .54$, $p < .001$), therefore hypotheses 2b is supported.

Table 10
Predictors of perceived usefulness (N=139)

Independent variable	**β**
Perceived ease of use	.54***
Adjusted R^2	.28
F	55.05

Note. ***p< .001

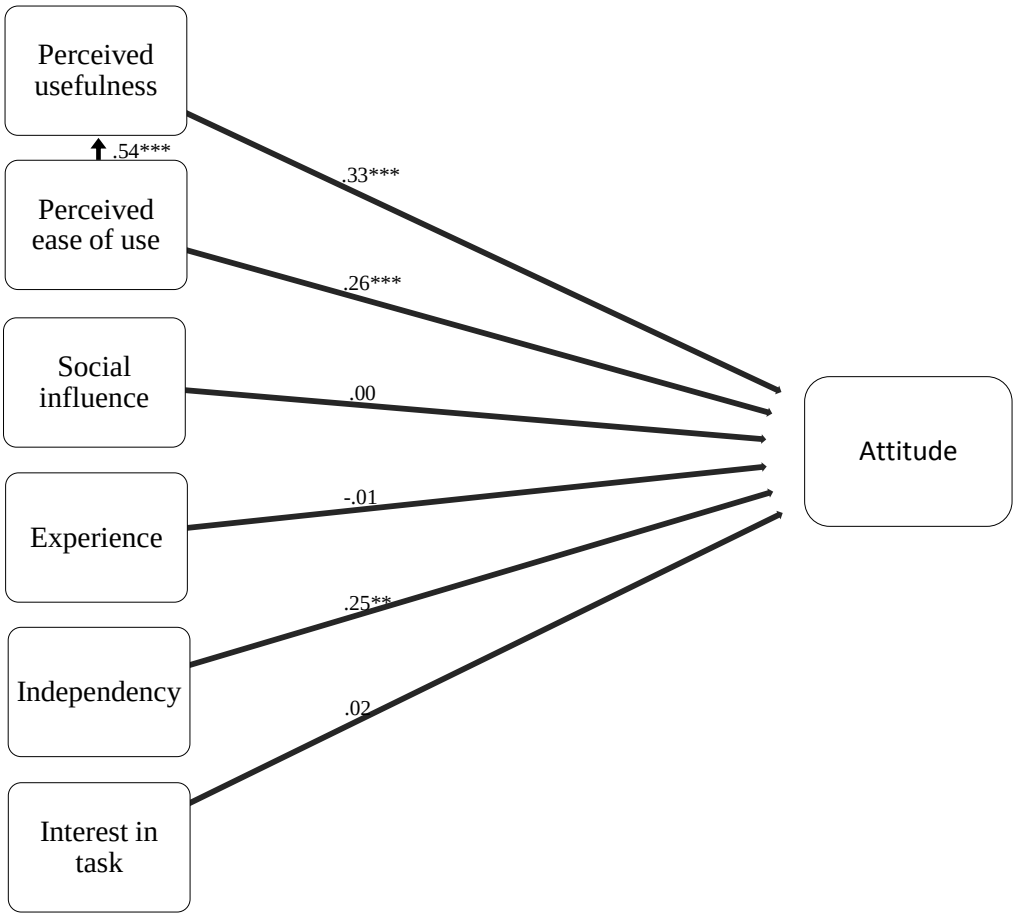

Figure 2: Results from the linear regression analyses of the tablet PC in general.

4.2.2 Comparing the attitude towards the closed and open system

To compare the open and closed tablet systems, two additional analyses were done: one for the attitude regarding the closed tablet system, and one for the attitude concerning the open tablet system. The results of the closed system analysis, revealed that the predictors accounted for 54,0% of the variance in attitude towards the closed tablet system (R^2= .54, F (6, 64) = 14.52, p < .001). Table 11 shows that four predictors were not significant, the hypothesized perceived ease of use (H2a), social influence (H3), experience (H4), and interest in the task (H6) are rejected. The two variables that are left in the model are perceived usefulness (β = .51, p < .001) and independency (β = .31, p < .05). These two variables have a positive effect on the person's attitude towards the closed tablet system and therefore supported hypotheses H1 and H5. The model is displayed in Figure 3.

Table 11
Predictors of attitude (N=71)

Independent variable	**β**
Perceived usefulness	.51***
Perceived ease of use	.02
Social influence	-.11
Experience	.02
Independency	.31*
Interest task	.18
Adjusted R^2	.54
F	14.52

Note. *p<.05; **p < .01; ***p < .001

For the closed tablet system the influence of perceived ease of use on perceived usefulness is tested. Results indicated that perceived ease of use accounted for 55,0% of the variance in perceived usefulness (F (1, 69) = 85.24, p < .001). The linear regression in Table 12 also shows that there is a significant positive effect of perceived ease of use on perceived usefulness (β = .74, p < .001), hence supporting hypotheses 2b.

Table 12
Predictors of perceived usefulness (N=71)

Independent variable	**β**
Perceived ease of use	.74***
Adjusted R^2	.55
F	85.24

Note. ***p< .001

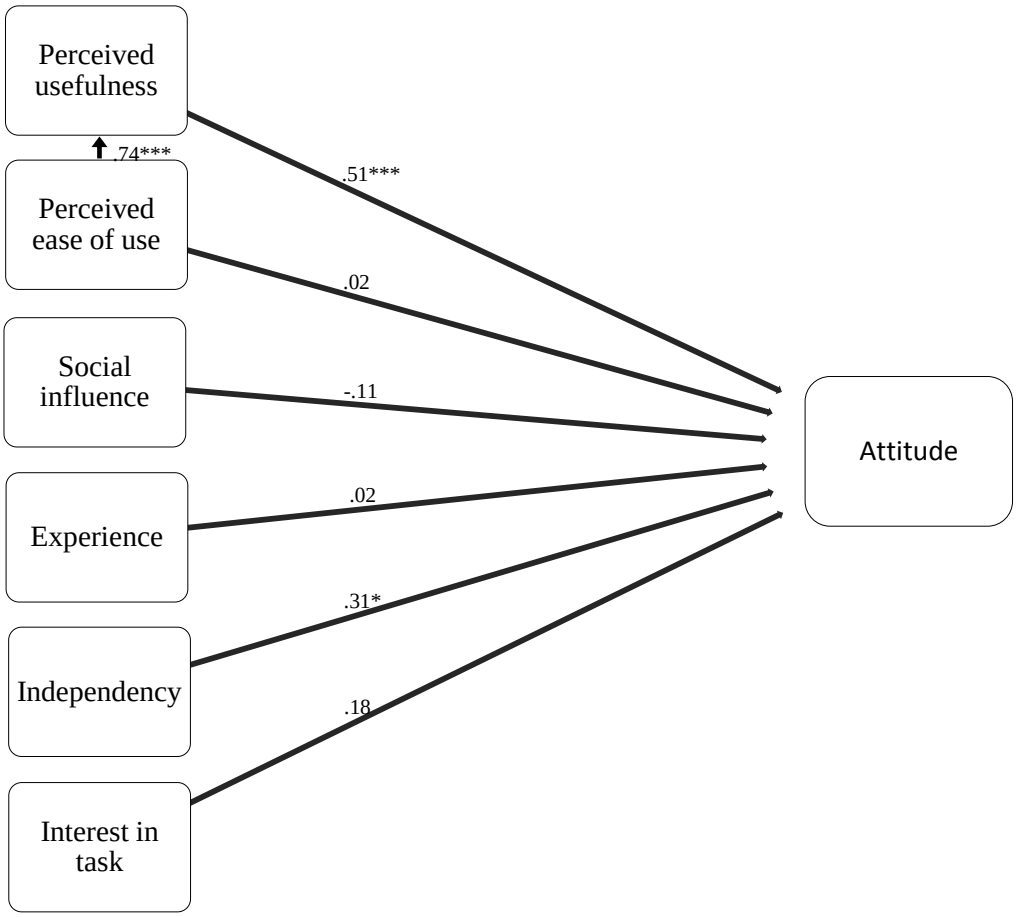

Figure 3: Results from the linear regression analyses of the closed tablet system

The last regression analysis will test the attitude towards the open tablet system. It was found that 49,0% of the variance of attitude towards the open tablet system can be explained by the six predictors (R^2= .49, F (6, 61) = 11.67, p < .001). As can be seen in Table 13, four predictors were not significant, the hypothesized perceived usefulness (H1), social influence (H3), experience (H4), and independency (H5) do not explain the variance in the attitude towards the open tablet system. The remaining two predictors, perceived ease of use (β = .35, p < .01) and interest in the task (β = -.20, p < .05) both significantly accounted for the variance in a person's attitude towards the open tablet system. Therefore hypotheses H2a and H6 are supported. The model is displayed in Figure 4.

Table 13
Predictors of attitude (N=68)

Independent variable	**β**
Perceived usefulness	.13
Perceived ease of use	.35**
Social influence	.23
Experience	-.00
Independency	.22
Interest task	-.20*
Adjusted R^2	.49
F	9.19

Note. *p<.05; **p < .01; p < .001

Just as the influence of perceived ease of use on perceived usefulness is tested for the tablet PC in general and the closed tablet system, this test analyzes the degree of influence for the open tablet system. As is displayed in Table 14 the adjusted R^2 had a value of .29 ($F(1, 66) = 28.45$, $p < .001$). This holds that 29,0% of the variance in perceived usefulness is explained by perceived ease of use. Perceived ease of use is a significant predictor for perceived usefulness ($\beta = .55$, $p < .001$), for that reason supporting hypotheses 2b. To conclude all hypotheses of study 2 are visualized in Table 15 and 16 to give an overview regarding which hypotheses are supported and rejected.

Table 14
Predictors of perceived usefulness (N=68)

Independent variable	**β**
Perceived ease of use	.55***
Adjusted R^2	.29
F	28.44

Note. ***p< .001

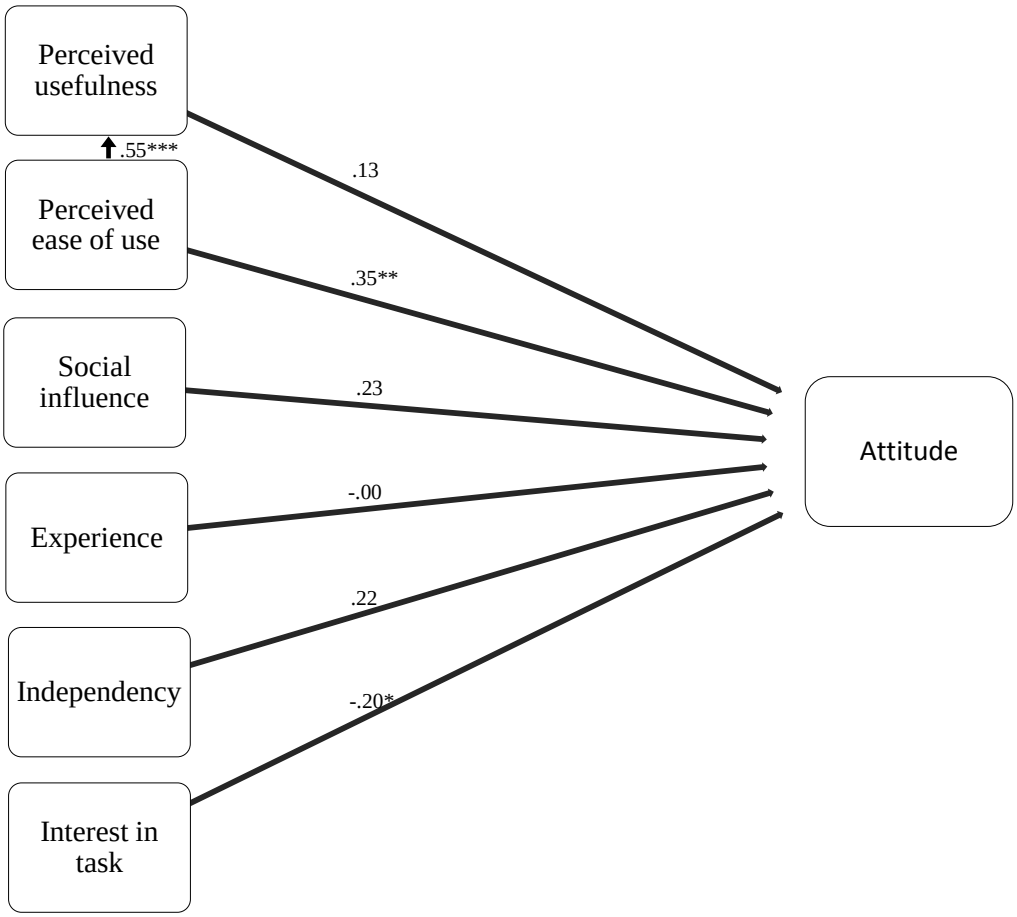

Figure 4: Results from the linear regression analyses of the open tablet system

Table 15
Overview supported and rejected hypotheses regarding attitude

Variables	**General**	**Closed**	**Open**
H1: Perceived usefulness	Supported	Supported	Not supported
H2a: Perceived ease of use	Supported	Not supported	Supported
H3:Social influence	Not supported	Not supported	Not supported
H4:Experience	Not supported	Not supported	Not supported
H5:Independency	Supported	Supported	Not supported
H6:Interest in the task	Not supported	Not supported	Supported

Table16
Overview supported and rejected hypotheses regarding perceived usefulness

Variable	General	Closed	Open
Perceived ease of use	Supported	Supported	Supported

A two-way ANOVA was conducted to compare the effect of the variables for the closed tablet system and the open tablet system. To require a more precise measurement and reduce the variance in error terms, gender is used as a covariate. A comparison between the closed and open tablet system revealed that the average mean value of attitude does not significantly differ ($F(1,124)= 0.09$, $p = .77$). The same goes for independency, there is no significant difference between the open and closed tablet system ($F(1,134)= 1.76$, $p = .19$).

The effect of the tablet PC type on perceived ease of use was significant ($F(1,134)= 14.43$, $p < .001$). Indicating that the mean score of the open tablet system is higher (M= 4.39,SD= 0.53) than the closed tablet system (M= 4.02,SD= 0.59). The same for perceived usefulness, the effect of the tablet PC type on perceived usefulness was significant ($F(1,134)= 5.86$, $p < .05$). Suggesting a higher mean score for the closed tablet system (M= 4.06,SD= 0.78) compared to the open tablet system (M= 3.72,SD= 0.84). Social influence is measured with an independent sample t-test because the variance across groups was not equal. There was a significant effect of the tablet PC type on social influence ($F(1,118)= 8.82$, $p < .001$). Illustrating a higher mean score for the closed tablet system (M= 3.75,SD= 0.56) compared to the open tablet system (M= 3.17,SD= 0.80). At last, there is a significant effect of the tablet PC type on interest in the task ($F(1,134)= 17.26$, $p < .001$). Indicating a higher mean score for the closed tablet system (M= 3.41,SD= 0.92) compared to the open tablet system (M= 2.83,SD= 0.79).

5 Discussion

The consequences of the results are discussed in this section. First, the findings for the adoption process of the tablet PC in education are discussed. In the second section the findings for the acceptance of tablet PC by children will be reviewed. Third, the conclusion and last the limitations and suggestions for further research are discussed.

5.1 Main findings study 1: Adoption process

The aim of this study was to discover how primary schools go through the adoption process of using the tablet PC for education.

The first step is gaining awareness. For an organisation like Snappet who provides educational tablet PC's awareness is acquired by approaching schools. In contrast, schools using an open tablet system felt the need to implement the tablet PC so they want the tablet PC in their strategy and culture, indicated by Frambach and Schilleweart (2002) as an adopter characteristic. When awareness is gained there are several triggers that lead to the persuasion phase. The most important objectives in this and other studies is keeping abreast of times and prepare children for the future (Clarke et al, 2013; Selwyn, Potter, & Cranmer, 2010). Other factors are, motivation, giving direct feedback to children, mobility and working together. This concurs with Alshamaila et al. (2013) research who mentions relative advantages as determinant for adopting cloud computing.

In the persuasion phase schools with a closed tablet system used the Snappet organisation for gaining information, whereas schools with an open tablet system consulted various sources. The usage of one source is probably due to the pilot, because adoption is financially less risky. Thereby, the supplier of the innovation influences the probability of the innovation being adopted (Alshamaila et al., 2013; Frambach et al., 1998). The model of Frambach and Schilleweart (2002) confirms that activities of suppliers, like creating awareness and risk reduction influence the adoption decision. In contrast, the schools with an open tablet system are buying the tablet PC and want more certainty for their investment, therefore more sources are used. As a conclusion, pilot schools trust the supplier and are not searching for more information, while schools without a pilot gain knowledge by a variety of sources.

In addition to used sources, in the persuasion phase a positive or negative attitude towards the innovation is formed. It is assumed that directors and teachers attitude towards the tablet PC was positive otherwise they would probably not have adopted the tablet PC. Thereby, primary schools were able to point out a lot of advantages in advance. The innovation was, for instance, found compatible to needs, not perceived as complex, and for the closed system perceived as triable. These are all characteristics that influence the perception towards the innovation (Rogers, 1995). Therefore, the perceived innovation characteristics influenced the adoption decision (Frambach & Schillewearts, 2002).

Disadvantages had to become apparent in the implementation phase. However, schools working with the closed tablet system were more concerned about the effect of this new way of working. Such as the tablet PC's effect on fine motor skills, and differentiating between children, because some children are fast and others slow. The schools using the closed tablet are most-likely more concerned because they replace their textbook and exercise book by the tablet PC and are therefore using the tablet PC more frequent. Schools with the open tablet system use the tablet PC more as an extra tool for teaching.

When making the decision of adopting the tablet PC for education often only the director and the ICT person who also teaches are involved. Therefore these are the most influential persons in the decision making phase. The few amount of person's make the adoption decision probably fast because there is rich communication between the person's involved (Lind & Zmud, 1991).However, other teachers are not involved except for one of the six schools studied. It is remarkable that the team is not involved. Possibly schools have no time to discuss the subject with the whole team or schools want a fast decision process.

The environment like parents had no influence regarding the decision, except for one school. The fact parents have no influence on the decision is in contrast to the model of Frambach and Schilleweart (2002). Nevertheless, there were no complaints from parents about the usage of the tablet PC in class. This is in contrast with schools that want to change in Steve Job schools, these parents are angry (Hoek, 2013). However, this is more caused by the new way of teaching, there are no fixed classrooms and school hours are flexible, thereby parents have less confidence in the teachers (Hoek, 2013).

The social network had little influence on the decision. This is in contrast to studies mentioning that social influence plays a positive role in the intention of a consumer to adopt an innovation (Frambach & Schilleweart, 2002; Kulviwat et al., 2009). A reason for the adopters' environment of Frambach and Schilleweart's model not being influential could be the lack of competitive pressure. Since, the schools in this research are one of the first schools who made the adoption decision these schools belong to the innovators of Rogers (2003) adopters' categories. This could be the reason of no influence and pressure from other primary schools.

Another explanation for the closed tablet system is the pilot, because there is less risk financially and therefore no opinion of other schools is asked. Despite the fact social influence had little influence on the adoption decision this could change. To begin with, more schools are adopting the tablet PC (Sneller, 2007). This leads to more attention regarding tablet PC adoption and therefore schools are more likely to be influenced by others.

There are various decisive reasons to implement the tablet PC, some schools wanted, for instance, to replace the computer with the tablet PC. When more or even all primary schools want to replace the computer or their books this would mean schools are making the next technological shift, just as schools replaced their chalk board for a digital school board. This would have a huge impact on the way schools work, since the tablet PC is more accessible and offers more possibilities.

Besides replacing the computer, an additional decisive reason for the closed tablet system is the fact that the tablet PC is financially attractive as of the pilot. This is in line with Rogers (2003) statement, saying that the decision to adopt is made more quickly when the innovation is on trial basis. While the main decisive reason for an open tablet system was having an extra tool and they adopted more from a need in contrast to the closed system. The decision between the two tablet PC's was made without doubt, the other tablet PC was as called by Rogers (2003) actively rejected. A possible reason is the difference between tablet PC's. Both tablet PC's are used in a different way and schools adopt the tablet PC that best fits their need. Actually, the second study confirms that the tablet PC's are used differently because children value different variables more. Besides the difference in need, money plays a role, some schools cannot afford to adopt the open tablet system.

Overall, expect for one participant, all schools had a positive experience with the tablet PC for educational use. This positive experience is also due to the findings in the second study which reported the positive attitude of children when using the tablet PC. Besides, the overall positive experience according to Rogers (2003) in the implementation phase problems can occur this was also the case in this study. In the beginning there were a variety of problems mostly regarding the functioning of the closed tablet system, but these problems are reduced. The open tablet system had fewer problems two

participants did not notice problems at all. The reason of fewer problems is probably due to the quality of the open tablet system. Schools using the open tablet system often work with a brand which is known for quality, for instance, iPad while closed tablet schools use the Snappet which probably of lesser quality. This is acknowledged by children participating in the second study, children using the open tablet PC perceived the tablet PC as easier to use compared to children who used the closed tablet system.

There were a lot of advantages the main advantage was the increase in enthusiasm of children. In several other studies the increase in motivation and enthusiasm when using the tablet PC or computer is also mentioned (Clarke & Svanaes, 2012; Li, et al., 2010; Mouza, 2005; Twining et al., 2005). The increase in motivation might be caused by a change in children's need. The old system with textbooks and exercise books might be considered outdated for children living in an increasingly digital world. To illustrate, technology has become ubiquitous in our lives, children also called 'digital natives' are surrounded by and interacting with technological devices (Prensky, 2012). Furthermore, there is a need for adopting technology in the classroom in order to stimulate children and their active participation in class (Agostini, Biase, & Loregian, 2010).

Additionally, children with a problem like, for instance concentration can better keep up with the rest of the class. Just as other studies confirm, computer mediated communication is an appropriate means to communicate with students' that suffer from social and emotional shortcomings (Clarke & Svanaes, 2012; Eden & Heimand, 2011). The child is probably less distracted due to the tablet PC's clarity. According to a teacher in the first study no pencils, gum, books or other sums are distracting, therefore a child can focus better on the exercise. Moreover, the increase in motivation could also lead to a better concentration. Actually, the increase in motivation is frequently mentioned by teachers and directors of the first study, this increase in motivation is also confirmed by other studies (Clarke & Svanaes, 2012; Iwayama et al., 2004; Li et al., 2010; Twining et al., 2005).

Thereby, the directors and teachers using the closed tablet system indicated the advantage of giving direct feedback this advantage is also mentioned in research of Koile and Singer (2006). In general,

more advantages about the tablet PC for educational use are mentioned by schools who work with the closed tablet system, but they also name more disadvantages. The quality of the tablet PC can cause problems, but the way these schools use the tablet PC gives a lot of advantages.

These disadvantages are often about the functions of the tablet PC. Some schools experience a weak Wi-Fi connection while a good Wi-Fi connection is very important for usage. Fister and McCharthy (2008) found that one of the two most important features of the tablet PC in education is the wireless connection. Although according to Sommerich et al. (2007) a disadvantage of the tablet PC is the dying battery in class, but this was not experienced by the primary schools of this study. With regard to the closed tablet system disadvantages are no internet connection and because of the software the tablet PC can only be used for whole class teaching.

Besides the functioning of the tablet PC, schools working with the closed tablet system name the disadvantage of posture. Children may experience back and neck complains. This is in line with research of Sommerich et al. (2007) who mentions as a downside of the tablet PC the physical discomfort as in headache, shoulder, neck or back pain, and visual discomfort, like tired eyes. It is remarkable that schools with an open tablet system did not mention or experience posture problems. When examining the interviews this is probably because they use the tablet PC less frequent or more spread over the day. With the open tablet system a greater variety of courses can be given, for instance, math in the beginning of the day and history at the end of the day. While the closed system has limited course options and the courses given like math and grammar are often in the morning. However, these problems can be reduced by making the workplaces of children more tablet PC friendly. The tables might need to be adjusted or a stand case cover, or keyboard for the tablet PC could be used to improve posture.

The decision to continue with the tablet PC is made in the last stage, confirmation. One school stops using the closed tablet system because teaching becomes whole class teaching and the costs are too high, so they want to try a pilot with a tablet PC with an open system. This is called disenchantment discontinuance, holding that the innovation did not satisfy the individuals' needs and therefore the

innovation is replaced (Rogers, 2003). The rest of the primary schools continue to use the tablet PC in education. The decision to stop or continue is often based on finance. For instance, schools with a closed tablet system doubt or cannot afford to pay a price each year, and schools with an open tablet system prefer more tablet PC's but this is financially expensive.

5.2 Main findings study 2: Acceptance

The goal of the second study was to find out which factors have influence on children's acceptance of the tablet PC in class. Thereby, the differences between factors are analyzed for the closed and open tablet system. For this purpose, a research model was developed testing attitude towards the tablet PC with as independent variables perceived usefulness, perceived ease of use, social influence, experience, independency, and interest in the task.

In this study, of the six factors included in the research model three constructs proved significant contributors to the attitude towards using tablet PC's: perceived usefulness, perceived ease of use, and independency. Thereby, perceived ease of use influenced perceived usefulness. This is accordance to research of El-Gayar and Moran (2007) who confirm that it is reliable to use TAM for investigating students' acceptance of the tablet PC.

To improve one's attitude, policy makers should focus on theses constructs. For example, perceived usefulness can be addressed by explaining the diverse usage types possible or by using the tablet PC frequently for school. Perceived ease of use can be increased by preventing technical problems like for instance, an insecure Wi-Fi connection. Furthermore, the more children find themselves independent because of the tablet PC, the better their attitude and the higher the chance of acceptance of the tablet PC. This is in accordance with the findings of Couse and Chen (2010) who found that when children become more familiar with the tablet PC their independency increased and there was less need for assistance and instruction from an adult. The fact that the tablet PC gives children an independent feeling does not mean teachers are not necessary anymore. However, the feeling of independency can be increased by using textbooks and exercise books less frequently in class, but instead use the tablet PC more.

Social influence did not significantly contribute to explaining a person attitude. This is not in accordance with other studies, which discovered that social influence does have a significant impact on technology use and affected attitude or behavioral intention (Kulviwat et al., 2009; Lai et al., 2012). It could be possible that social influence is less important for attitude because using the tablet PC in class is mandatory and the teacher decides what will be done, therefore children are less influenced by others in usage. Moreover, when using the tablet PC voluntary social influence is much larger than when tablet PC use is mandated (Moran et al., 2010).

Having experience with a computer (Moran et al., 2010) or the internet (Gardner & Amoroso, 2004) increases acceptance. However, in this study experience did not increase the attitude and therefore higher the chance of acceptance towards the tablet PC. A likely explanation is the ease of use of the tablet PC, for instance, children perceived the tablet PC in the second study as easy to use. In addition, the respondents in the interviews claim that children got used to the tablet PC very quickly and naturally. Besides the findings in this research other studies confirm that the tablet PC for educational purposes is perceived as an easy to use device (Dündar & Akçayır, 2014; El-Gayar et al., 2011; Twining et al., 2005). Therefore having experience with the tablet PC is probably not essential.

Additionally, the interest in the task does not influence the attitude towards the tablet PC. It is unexpected that children's view towards school and learning does not influence the attitude towards using the tablet PC. Probably the tablet PC itself makes children more motivated and increases the interest in the task. This is confirmed by several studies that found an increase in motivation to learn when using the tablet PC (Clarke & Svanaes, 2012; Iwayama et al., 2004; Li et al., 2010; Twining et al., 2005). In addition, teachers in the first study mentioned an increase in children's enthusiasm for learning when using the tablet PC. Therefore, no liking regarding the task, learning, or school is needed to influence a positive attitude.

5.2.1 Difference between closed and open tablet PC system

The attitude of children working with the closed tablet system is determined by perceived usefulness and independency. While the attitude of children that use the open tablet system is influenced by perceived ease of use and interest in the task. The difference in importance of perceived usefulness,

perceived ease of use and independency is probably caused by the features and usage of the tablet PC. The closed tablet system is used more frequent, therefore perceived usefulness and independency increase attitude.

For the open tablet system primarily the Ipad is used which is known to be easy to use (Sloan, 2012; Culén & Gasparini, 2011) therefore for the open tablet system ease of use is an important predictor. Most remarkable is the negative influence of interest in the task on attitude. The significant relationship could be explained by Couse and Chen (2010) who state that the interest in the task increases with age and the children using the open tablet system are older. However, this does not explain the negative relationship. The relationship implies that children who like to learn are not positive towards using the tablet PC and maybe prefer for instance, textbooks and exercise books. However, this is in contrast with the overall liking of the tablet PC.

In addition, the variables of the open and closed tablet system are compared. As a result perceived ease of use was higher by children who used the open tablet system. A possible reason could be that children who use the closed tablet system experienced more technical difficulties when using the tablet PC in class. Having technical difficulties with, for instance, the Wi-Fi connection is frequently mentioned by participants of interviews, while schools using the open tablet system experience no or less difficulties.

Perceived usefulness was found to be higher with schools using the closed tablet system. Probably the way of using the tablet PC and frequency of use can explain this difference. The schools working with the closed tablet system replace textbooks and exercise books by the tablet PC, which children find probably more useful than using the tablet PC as a tool for extra work. By replacing educational books and using the tablet PC more frequent children with the closed tablet system perceive their school work as better, can make more work, and find the tablet PC useful for school assignments.

When comparing the means of social influence children of the closed tablet system are more influenced by others than children using the open tablet system. This can be caused by the fact that children use the tablet PC more frequently and therefore share more stories, give advice, and request

help of other children. The higher degree of social influence can also be accounted to the age of the children, younger children might be more suggestible. In fact, it is confirmed by several studies that younger children are more suggestible than older children (Ceci & Huffman, 1997;Vrij & Bush, 2000). The closed tablet system is used by children in class four, while the open tablet is used by older children that are in group five. Children who use the closed tablet system are also more interested in the task than children who use the open tablet system. A feasible explanation for that finding could be the frequency of use, because children with the closed tablet use the tablet PC more they also like school more. However, it can also be that the assignments on the closed tablet system are more attractive.

5.3 Conclusion

This research contributed to the body of knowledge regarding the adoption process and acceptance of the tablet PC in education. A lot of schools have to decide to adopt or not adopt the tablet PC. This decision requires financial and pedagogical considerations. Thereby, do children benefit from this change? In brief, it is evident that schools and children are overall positive about the tablet PC for educational usage. This is confirmed by the fact that schools want to continue using the tablet PC. Thereby, children have a very positive attitude towards using the tablet PC. Therefore, this research supports the fact that tablet PC's are favorable for education.

To be more precise, children perceive the tablet PC as easy to use, useful for education and they feel more independent when using the tablet PC than when using textbooks and exercise books. However, the importance of variables influencing attitude varies between the open and closed tablet system. For the closed tablet system attitude is determined by perceived usefulness and independency. In addition, the interest in the task and usefulness is higher. This is probably due to the frequency of use and the software program on the tablet PC. While with the open tablet system attitude is increased by perceived ease of use and this is higher compared to the closed tablet system. This is likely due to the quality and the ease of use of the tablet PC. Thereby, when comparing the advantages and disadvantages of both tablet PC's there is room from improvement. The closed tablet system shows a lot of advantages. For instance, teachers can give immediate feedback and have more time to help

children, prepare lessons and see the process of children, but they would like an open structure. On the other hand, schools with an open tablet system are also pleased with their tablet PC. Children can work together and there are a lot of teaching possibilities because of the internet and variety of apps. Therefore, it would be ideal to combine the benefits of both tablet systems. For this reason, it would be of added value when publishers offer besides textbooks and exercise books, their own educational apps. As a result, the ideal tablet PC is easy to use, so of a good quality and combines the software program of the closed tablet system with the open structure of the open tablet system.

Therefore, publishers of methods should offer besides text books and exercise books, apps that can be used to practice the course material, and see the process of children. When publishers of methods create educational apps this stimulates a technological shift and as a result the tablet PC and therefore technology will be used more for education. Concluding, publishers of educational books should keep abreast of times just as schools in order to satisfy the educational needs of children, teachers and directors.

5.4 Limitations and future research

Several limitations can be pointed out in this study. First of all, it should be considered that the present study was conducted with schools that use the tablet PC in various ways. Some schools use the tablet PC more frequent than others, but also the way of using varies some use the tablet PC as extra work while others use the tablet PC to replace textbooks and exercise books. Then there is also the difference in tablet PC's: three schools use the closed tablet system and three schools use an open tablet system. The amount of tablet PC's per class also differs, children working with the closed tablet system each have their own tablet PC while the amount of tablet PC's for schools using the open tablet system varies. However, these differences give a good reflection of how the tablet PC is used by schools. Moreover, despite all those differences children were positive regarding the tablet PC.

Another limitation could be concerned with the choices that are made when measuring the variables. Specifically, social influence did not influence the child's attitude. The construct of Venkatesh et al. (2003) is not chosen to measure social influence because questions were too difficult and did not fit

probably in the context of this study. Would outcomes be different when this construct was used in the questionnaire? Probably not, because the study of El-Gayar and Moran (2006) evaluated student's acceptance of technology using UTAUT, but social influence did not have a large contribution. Moreover, in the study of Anderson et al. (2006) who also use UTAUT social influence was not significant.

In addition, the non significant effect of experience on attitude can possibly be attributed due to the way of measuring the variable. This was measured by asking if children have a tablet PC at home, but would this be different when, for instance, the amount of years children use the tablet PC was questioned? The amount of years is probably hard to measure because these children are young so it is doubtable that they remember exactly how long they have used the tablet PC.

Besides usage and way of measuring the amount of participants could be a limitation. There was a difference between the closed and open tablet system concerning the importance of variables that influence attitude. This could be caused by the limited amount of participants. There were 71 respondents who use the closed tablet system and 68 respondents that use the open tablet system. This difference can also be stimulated by the diversity in age. Children using the closed tablet system were in group four, while children using the open tablet system were in group five. This difference in age could influence the variance in attitude, but this not likely, cause the age difference is just a few years. Another limitation of the second study could be the teachers who read out the questionnaire, this could be steering. However, by reading the questionnaire out loud children did not easily skip questions and changes of misunderstanding are smaller.

Suggestions for future research are investigating other factors that could influence attitude and higher the chance of acceptance of the tablet PC. The proposed model explains 47. 3% of a person's attitude regarding the tablet PC for educational usage, so there is still a large part to be explained. In research of Bruner and Kumar (2005) fun is a positive determinant for attitude towards hand held devices, another dominant factor could be the students' needs (Lai et al., 2012). However, more research should be conducted in order to confirm if these factors can be added to the model.

Thereby, it is interesting to know the differences between tablet PC's, in this research only two tablet PC's are investigated the closed and the open tablet system, but there are various sorts of open tablet systems. It would be interesting to investigate if there are differences in acceptance of the various tablet PC's. In addition, another study could test the interest in the task with a control group. Do children who work with a tablet PC find school more interesting and enjoy learning more than children that only learn by textbooks and exercise books? These are all research questions that could be further investigated in order to improve the knowledge concerning children and learning with a tablet PC.

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7 Appendix

7.1 Appendix A

Semi structured interview

Demografische vragen

1. Hoeveel leerlingen zitten er in de klas? (leraar) (adopter characteristics)

2. Hoeveel leerlingen heeft de school? (directeur) (adopter characteristics)

3. Wat is de achtergrond van de school? (directeur) (adopter characteristics)
Openbaren basisscholen, Bijzondere basisscholen (rooms-katholiek, protestants etc), Brede scholen (bieden bijv. ook naschoolse opvang), Algemeen bijzondere scholen (montessorischolen, daltonscholen, jenaplanscholen en vrije scholen), Gemengde scholen (afspiegeling van de samenleving)

4. Wat is uw functie binnen de school? (adopter characteristics)

5. Hoeveel tablets heeft uw school? (directeur) (adopter characteristics)

6.Welke tablet wordt op uw school gebruikt (de Snappet of iPad/Samsung (Prowise)? (directeur) (adopter characteristics)

7. Wat is uw leeftijd?

8. Hoelang bent u werkzaam op school?

Adoptie vragen (diffusion of innovation, Rogers)

Knowledge

1. Kunt u vertellen hoe u in aanraking bent gekomen met de tablet voor educatief gebruik? (Supplier marketing efforts) door signum/ ato scholenkring/ digidact/vrijwillig/ stond het al vast

2. Waardoor werd uw interesse voor de tablet voor educatief gebruik gewekt?

3. Wie waren er betrokken bij de keuzen om tablets te implementeren op school? Waar is de keuze voor een gesloten of open systeem op gebaseerd? (directeur)

Persuasion

1. Welke informatiebronnen heeft u gebruikt om meer te weten te komen over de tablet?

2. Welke voordelen zag u in het gebruik van tablets? (Perceived innovation characteristics)

3. Welke nadelen zag u in het gebruik van tablets ? (Perceived innovation characteristics)

4. Wat heeft de doorslag gegeven om tablets te gebruiken ? en de keuze tussen de 2 systemen?

Decision

1.Hoe heeft u de risicos verlaagd bij de aanschaf van de tablets? Risico verlaagt door een trial of een lage introductie prijs ? (Supplier marketing efforts), gekeken naar competitie?, invloed van bestuur/omgeving?. /training

2. Heeft u de beslissing met collega's genomen? Wie was er betrokken?extern en intern (social network)

3. Werd uw beslissing beïnvloed door collega's die al tablets gebruikten? (Environmental influences)

Implementation

1.Wat zijn uw ervaringen met het gebruik van de tablets in de klas?

2.Heeft u problemen ondervonden bij het implementeren van de tablet in de klas

3.Welke voordelen ervaart u bij het gebruik van de tablet in het onderwijs?

4.Welke nadelen zijn er?

Confirmation

1.Heeft u achteraf twijfels over de keuze van het open of gesloten systeem? Kunt u dit toelichten? Bent u nu tevreden over de keuzen van het open / gesloten systeem?a

Zo nee, waarom?Zo ja, zou u liever het andere systeem gaan gebruiken? Waarom?

Extra vragen over de tablet en het gebruik

1.Wat is de plaats van het tablet in het onderwijs? Wordt de tablet samen met boeken gebruikt?

2. Waarvoor wordt de tablet vooral gebruikt?

3. Bij welke lessen wordt de tablet ingezet?

4. Door welke groepen wordt de tablet gebruikt? (directeur)?

5.Hoe vaak wordt de tablet gebruikt?

7. Houdt u ervan om met nieuwe innovaties te experimenteren? (adopter characteristics)

8.Heeft u ter afsluiting nog aanvullende opmerkingen?

7.2 Appendix B

Table17
Original quotes

Interview ID	Sub-code	Translated quotes (original Dutch quotes in italics)
Knowledge		
P2	Board	At a meeting with directors, we have certain moments where we come together and at this meeting a speaker of Snappet was present and told us what they were doing. *Dat was op een directieoverleg daar hebben wij studiemomenten in en op dat moment kwam er een spreker van Snappet die vertelde waar ze mee bezig waren.*
P7	Director	The director of school indicated that there was a pilot where we could participate in, and that he had assigned me to join, because he thought I would be interested. He was right about that. *De directeur gaf aan dat er een soort pilot was waar we aan mee konden doen en dat hij mij daar voor had opgegeven omdat hij dacht dat ik daar wel interesse in had, en daar had die gelijk in.*
P9	Experiment	The first experience for us was with a school theme that I started, this was last year in March or April I think. In every class there was a device so in one class was a tablet PC and in the other classes were other devices, and that was the moment we were introduced to the iPad. *De eerste ervaring voor ons was een schoolthema dat ik had opgestart, dat is vorig jaar geweest in maart april denk ik. Toen hadden we in iedere groep een device dus in een groep was er een tablet en in een ander lagen andere devices en toen hebben voor het eerst kennisgemaakt met de iPad.*
P6	Media	Of course via the media, we are informed about iPad schools, and that tablet PC's will be used in class. *Ja natuurlijk via de media is er al heel veel dat er steeds meer iPad scholen komen en dat de tablets in de klas komen.*
	Children/ internet	Through the children, almost all children have an iPad at home and some even have more than one iPad. This also has to do with the population of our school. In addition, you read on the internet about, for instance, iPad's for educational usage so then I thought, I want to do something with the iPad. *Nou eigenlijk door de kinderen, bijna alle kinderen hebben thuis een iPad, sommige hebben er zelfs meer dan 1. Dat heeft denk ik ook te maken met de bevolking van deze school. En je leest ook wel op internet bijvoorbeeld over iPad's in het onderwijs dus toen dacht ik daar wil ik iets mee.*
P11	The future	You must keep abreast of the times, we see it as a tool not as an end in itself. *Je wil graag meegaan met je tijd, we zien het als een hulpmiddel geen doel op zich.*
P3	Motivation	Because working with children and a tablet PC increases the motivation. *Omdat het werken met kinderen en een tablet motivatieverhogend werkt.*
P2	Direct feedback	That is good but especially not having correction work but be able to give direct feedback at incorrect answers was an enormous added value. *Dat is helemaal mooi maar vooral het eerste gegeven van geen correctiewerk maar wel directe instructie kunnen geven op fouten die gemaakt worden dat vond ik een gigantische meerwaarde.*
P2	Enlightenment teacher	Teachers get and are often busy with administration work. The tablet PC could be a gigantic relief because you do not have to, for instance, check the work for the course counting. *Aangezien leerkrachten heel veel bezig zijn en veel na zich toegeschoven krijgen op het gebied van administratie. Zag ik hier ook een stukje, dit kan een gigantische verlichting betekenen want je hebt je nakijkwerk voor bijvoorbeeld het vak rekenen niet.*
P7	No textbooks and exercise books	*C*ounting and orthography on the tablet PC seemed handy to me especially for the processing tasks (in dutch: verwerkingsopdrachten) so we do not need an exercise book but the assignments can be made on the tablet PC. *Het rekenen en het spelling werk leek me heel erg handig, vooral de*

		verwerkingsopdrachten, dat je daar geen schriftje voor hoeft te gebruiken maar dat ze die gewoon op de tablet kunnen maken.
P5	No interest	My interest for the Snappet tablet in education was not aroused. I was afraid that the Snappet was nothing more than a digital method that you have to use in a whole class teaching way. I think that tablet PC's should be used to educate individually and not whole class teaching. *Mijn intresse voor deze tablet in het onderwijs voor Snappet was eigenlijk niet gewekt. Ik was bang dat snappet niet anders was dan een digitale methode en die je klassikaal moet gebruiken. Ik vind juist dat je tablets moet gaan inzetten om individueel onderwijs te gaan geven en niet klassikaal.*
P11	Extra tool	We see the tablet PC as a tool not as a means to its end. That is very important to notify, ICT is a tool. *We zien het als een hulpmiddel geen doel opzich. Dat is wel belangrijk om te melden, ICT is zo ie zo een hulpmiddel.*
P1	Computer shortage/ mobility	It is two folded, on one hand we noticed that with project Vall Junior the school needed more computers and mobility, for that reason a tablet PC could be a solution. *Het is eigenlijk tweeledig, aan de ene kant hebben wij gemerkt dat bij een project vall junior dat er computers tekort kwamen en dat we behoeft hadden aan een stukje mobiliteit erbij, en dan dachten we aan tablets.*
P4	User friendly	User friendly and initiative was the first thing that convinced me 'this is so easy, everybody can do it' even a teacher that will retire in a year or a child of three years old. *Gebruiksvriendelijkheid en het intituative was het eerste wat mij meteen over de streep trok, 'dit is zo makkelijk dit kan iedereen' ook een leerkacht die een jaar voor zijn pension zit of een kind van 3.*
P4	Working together	We also wanted children to work together. We do not want a digital board, we want children to help each other. We know children learn more from each other than from us, so when they play an app together they can improve, help and support each other, and this was the idea. *We wilde ook graag dat ze samenwerken. We willen niet een digitale schoolbord ofzo we willen graag dat kinderen elkaar helpen, we weten dat kinderen meer van elkaar leren dan van ons dus dan zouden ze ook samen als ze een app doen elkaar kunnen verbeteren, helpen, ondersteunen dat was het idee daarbij.*
Persuasion		
P10	Information from Snappet	The mail from Snappet, the meeting of Snappet and halfway we had a meeting at Digidact. *Het mailtje vanuit snappet, de snappet bijeenkomst en halverwege hebben we bij Digidact een bijeenkomst gehad.*
P5	ICT team of school	My ICT team, they researched the topic. *Mijn ict'ers, de ict'ers zijn gaan uitzoeken.*
P6	Internet	On the internet you can find a lot of information but especially Digidact played a role in informing us. *Op internet kun je heel veel vinden maar met name hebben we van Digidact veel informatie gekregen.*
P9	Other people	The consumentenbond, there was also a magazine where we got information from, the internet, kennisnet is also a website that informed us and our experience with the experiment ,but also what we heard of other people. *De consumentenbond, er was nog een tijdschrift waar we in hebben gekeken, op internet, kennisnet had er al wel wat opstaan en wat we zelf hadden ervaren met het themaplan maar ook wat we hoorde van andere mensen.*
P1	Magazines, articles, consumentenbond	When you read professional journals it is often about tablet PC's, about the usage and the advantages. *sla de vakbladen erop na het gaat vaak over tablets, over het gebruik en de voordelen.*
P6	Super-board of ICT	Mainly Digidact informed us. *met name hebben we van Digidact veel informatie gekregen.*
P7	Direct feedback	I could also see directly if a child made a mistake so I can offer help. That is something what I really like. As a teacher you can never be as fast as the computer program.

		Ik kon ook meteen direct zien of een kindje ergens de fout in ging en dan kon ik ook meteen hulp gaan bieden. Dat sprak me heel erg aan. Dat kun je als leerkracht nooit voor elkaar krijgen wat dat computer programma doet.
P7	Examine exercise work	At the meeting was explained that I got a sort of dash board where I can see the progress of students. Normally I have to check all their schoolwork after school time and now it is immediately checked by the tablet PC. *Bij de bijeenkomst werd uitgelegd dat ik een soort moederbord had waarop ik de vorderingen van de leerlingen kon bijhouden dus normaal moet ik al het werk na schooltijd zelf nakijken en nu wordt het meteen door de tablet zelf nagekeken.*
P7	Replacing textbooks and exercise books	Now you can explain to children via the digiboard and also via the tablet, you can show on the digiboard what they see on their tablet PC and this is how I give my instruction, so children can get started. They do no need to work in their textbook or their exercise book anymore. The tablet PC is instead of so it is more complete than an iPad. *Nu geef je de uitleg via het digiboard en ook via de tablet, je kan laten zien op het digiboard wat zei op de tablet ook zien en dan geef ik mijn uitleg en kunnen de leerlingen aan de slag. Ze hoeven daarnaast niet meer in het boek te werken of in het schrift. Het is helemaal inplaats daarvan dus het is veel completer dan de iPad.*
P8	No advantages	Before we started I did not really know the advantages but now by trail and error we observe that children process more. *Voordat we begonnen wist ik dat nog niet echt maar nu proefondervindelijk merken we gewoon dat kinderen meer verwerken*
P11	No wires and small	Small, no wires and suchlike, that is very nice. *Klein, geen snoeren en dergelijke ,dat is echt heel erg fijn*
P9	Individually or together	You can use it good individually or together. *Je kan het individueel of met tweetallen heel goed inzetten*
P9	A lot of possibilities	Qua support of the lesson there are plenty of options, because it is an open source device so you can, for instance when you have a lesson vocabulary than you can immediately go on the web and let them search the words. I had the idea of an endlessness of possibilities of the tablet PC and I found that scary because how should we do that? But I found it a beautiful product and different than the standard computer. *Qua lesondersteunend kun je er alle kanten mee op, want het is een open source apparaat dus je kan, stel dat je woordenschat hebt ofzo dan kun je meteen het web op en ze woorden oplaten zoeken. Ik had wel het idee van de tablet dat de mogelijkheden oneindig zijn en dat vond ik wel weer spannend want hoe gaan we het dan doen. Maar dat vond ik dus wel een mooi product en anders dan het geijkte computer*
P9	User friendly	It is manageable and user-friendly. *het is handzaam het is gebruiksvriendelijk*
P4	Class position	As a teacher you often stand with you back to the class, a regular board or a digiboard does not matter, you are with your back to the class. With the tablet PC you do no longer stand with your back to the class you stand with your face to the class and on the board behind you it appears in big. Children do not need to walk to the front of the class anymore and can share quickly. *Als juf sta je ook vaak met je rug na de klas, maakt niet uit op een gewoon bord een digitaal bord, je staat met je rug na de klas. Dat is hier eigenlijk niet bij je staat met die iPad gewoon na de klas en op het bord achter je verschijnt het heel groot. Kinderen hoeven niet meer te lopen door de klas en kunnen snel delen.*
P6	No computers	*So especially the fact that children do not have to work on the computer is an advantage?* Yes, because we have not enough computers for everyone. Also, you do not have to make a scheme of whom and when can work on the computer. You can keep your class management the way you want it. *[Dus vooral het punt dat ze niet aan de computer hoeven dat is echt een groot voordeel.] Ja, want we hebben niet genoeg computers voor iedereen. Je hoeft dan ook niet hele schema's te maken van wie wanneer aan de computer gaat. Je kan gewoon je klas management behouden zoals jij hem graag wilt.*
P1	No disadvantages	*Initially there we no disadvantages of the tablet?* No, the disadvantages will reveal in the future.

		[Dus er waren in eerste instantie geen nadelen die u zag in de tablet.] Nee, de nadelen zullen nog moeten blijken in de toekomst.
P7	Vulnerability	I was wondering how it would go with damages, if children could carefully cope with it. *Ik vroeg me af hoe het zou gaan met brokken, of kinderen er voorzichtig genoeg mee om kunnen gaan.*
P7	Fine motoric	The only disadvantage at this moment or where I worry about is the fact that children have less motoric exercises regarding writing. *Het enigste nadeel wat ik op dat moment, of waar ik me druk over maakte was het feit van deze kinderen hebben nou minder schijfmotorische oefeningen.*
P2	Differentiating	And also the difference in tempo, how that would be obviated, because one student is of course faster this is the same with regular work and the other is slower. *en ook het verschil in tempo, hoe dat ondervangen zou worden, want de een is natuurlijk heel erg snel net zoals bij het normale werk en de andere is wat langzamer.*
P3	No internet	The fact that you cannot go on the internet. *Het feit dat je niet op het internet kunt.*
P3	Financial	*You mentioned several disadvantages and I if I understand correctly the financial aspect is the biggest disadvantage?* Yes, because the ultimate decision of going further or stopping with the tablet PC will depend on the costs. *[U heeft inderdaad wel enkele nadelen genoemd en het financiële was volgens mij wel het grootste nadeel.] Ja dat wordt het grootste nadeel want daar zal op een begeven moment de ultieme beslisfactor zitten van kan ik het wel of kan ik het niet zo doorvoeren.*
P9	Possibilities	I had the idea that the possibilities of the tablet PC are endless and I found that scary because how are we going to handle that. *Ik had wel het idee van de tablet dat de mogelijkheden oneindig zijn en dat vond ik wel weer spannend want hoe gaan we het dan doen.*
P4	Flash	Yes, before the implementation of the tablet PC we thought carefully about using Flash. A lot of educational websites work with Flash, which is a kind of programming language that works with moving images. Steve Jobs had once a fight with Flash and that is never solved, so programs with Flash are all blocked and that is difficult. *Ja, we hebben voor de implementatie heel goed nagedacht over het gebruik van Flash. Heel veel onderwijswebsites die werken met flash dat is een programmeertaal van met name bewegende beelden die. Ooit heeft Steve Jobs een ruzie gehad met Flash en dat is nooit meer goed gekomen dus die worden geblokkeerd en dat is lastig.*
Decision		
P4	ICT and director	Jerney (ICT) and I have taken the upper hand but we often gave feed back to the team. *Jerney en ik hebben met name de kar getrokken maar we hebben het veelvuldig teruggekoppeld met het team.*
P5	Director involves teachers	Director, ict'er and teacher of group four, those three. *Directeur, ict'er en leerkracht groep 4, die 3.*
P11	One person	Initially only I but I soon made that subject discussable. *In eerste intstantie alleen ik maar ik heb het wel vrij snel breder gemaakt.*
P7	Voluntary	*Were you involved in the decision-making or was the decision already made?* I could have said no. *[Kon je daar nog in mee beslissen of stond de beslissing vast?] Ik had wel nee kunnen zeggen inderdaad.*
P3	Replacement of computer	You have to think ahead, you now have the computer in school but do you want to continue to work with the computer or are you going to do it differently. *Je moet natuurlijk ook verder je hebt ook een computer in je school gekregen moet je het straks nog allemaal met die computer doen of ga je het anders doen.*
P8	Affordable	We just want to try it and financially it was practical because it is financed by the foundation. And why not. *Yes exactly also because you lease the tablet PC's.* Yes exactly, when we had to buy the tablet PC's we probably did not do it. *We wilden het gewoon proberen en financieel was het heel handig vanuit de*

		stichting dat ze het mee zouden financieren om die tablet te gaan draaien. En waarom niet.[Ja precies, ook omdat het een lease verband is]. Ja precies, als het kopen was geweest dan hadden we het niet gedaan.
P11	Extra tool	It was an obvious extra tool to use besides all the other tools. *Nou het was eigenlijk een vanzelfsprekend hulpmiddel om erbij te inzetten bij alle andere hulpmiddelen.*
P4	The future	It is important to be up to date; we want to make children ready for the society. *Het belangrijkst is om echt eigentijds te zijn, wij willen kinderen klaar maken voor de maatschappij.*
P2	Actively rejected	Because I am afraid when you work with the iPad and you are going to work with a variety of apps that you risk to lose control over what children are doing. *Want ik ben bang dat als je met iPad gaat werken en met allerlei verschillende apps gaat werken dat je het risico loopt dat je niet meer weet waar kinderen mee bezig zijn.*
P9	Passively rejected	We did not consider Snappet because it was still in its early stages. *Snappet hebben we toen nog niet eens naar gekeken omdat dat toen vrij in het begin was.*
P3	Financial	When you purchase iPads because they are not yet available on a lease basis, then it is much more expensive. That is something you cannot afford at all. *Maargoed als je iPads moet gaan aanschaffen omdat die nog niet op leasebasis beschikbaar zijn dan ben je vele male duurder uit. Dat is helemaal een verhaal wat je niet kunt bekostigen.*
P8	Development	But we do not like iPads because then you're bounded to apple so we would choose for another brand. They are still in development so therefore we did not directly choose for that. But iPads we just find too much bounded to Apple. *Maar wij vinden iPads zelf niet zo fijn omdat je dan apple gebonden bent dan zou wij eerder voor een android systeem gaan, van een ander merk dus. Die zijn nog in ontwikkeling en daarom hebben we daar niet direct voor gekozen. Maar iPads vinden we gewoon te Apple gebonden.*
P3	Outline	With the iPad, Apple it was not clear how the course material is structured and with Snappet this was not a problem. *Bij iPad, apple had je nog geen goed zicht op hoe is die leerstof dan gerangschikt dat hadden we bij Snappet wel.*
P7	Instead of normal work	That is maybe why we made the decision because Snappet is bounded to our school method and those apps of iPad are more extra work instead of the regular work and the Snappet is instead of regular work. *Ja dat is misschien waarom we tot deze keuze zijn gekomen dat de Snappet allemaal verbonden is aan onze methodes en die apss dat is dan meer extra werk in plaats van na hun gewone werk af hebben en de snappet is inplaats van het gewone werk.*
P4	Gloried answer book	A Snappet is a digital exercise book; thereby the iPad has a different vision. *Een snappet is een digitaal werkboek; en een iPad gaat ook van een hele andere visie uit.*
P4	Vision	Of course you pay for the individual textbooks per method, so that is financially covered and there is no paperwork anymore. But in terms of vision that is it, so it is little appealing to the 21 century skills. It is obviously user friendly for teachers, you do not have to make check up work and you see how many times sum four is incorrect, so you can rehearsal that the next day. But that is it. *Je betaald natuurlijk voor die individuele werkboekjes per methode dus een stukje geld en je bent klaar met het papieren werk. Maar het is eigenlijk qua visie dat is het ook. Dus er wordt weinig beroep gedaan op de 21 century skills. Het is absoluut een gebruiksgemak voor de leerkracht je bent klaar met het nakijken en er komt uit dat som 4 zovaak is fout gemaakt dus die ga ik morgen herhalen, maar dat is het dan ook.*
P11	individual teaching/ differentiation	At this school we do not do whole class teaching so than Snappet does not work. Thereby, I heard how Snappet works, and then I think, this does not work. I also questioned the differentiating possibilities and the man of Snappet explained it, but if found it very limited. *We werken ook niet klassikaal of iets dus dan gaat dat al niet. En ik heb gehoord hoe Snappet werkte en dan denk ik ja dat werkt niet. Ik heb ook doorgevraagd*

		hoe zijn de differentiatie mogelijkheden en die man van Snappet legde me dat toen uit toen dacht ik van ja dat is zeer beperkt.
P4	Society	I do not like the closed system because I think you should look at the society which is very open. You can grab all kind of information if you want, information pieces, photos for assignments you can get information everywhere that is what we want to teach. *Ik ben eigenlijk helemaal niet van een gesloten systeem want ik vind juist als je kijkt na de maatschappij het is hartstikke open je jat zo van alles bij elkaar als het moet, Informatie stukken, foto's voor werkstukken dat haal je toch overal vandaan, dat willen wij proberen te onderwijzen.*
P9	Creative, critical	No because I aim for teachers and children to be creative, and they need to be critical. But I find it the job of the teacher to be very clear to children and offer children the proper skills so they know how to approach it. *Nee want ik wil dat leerkrachten ook en kinderen zo creatief mogelijk kunnen zijn, en dat ze ook kritisch moeten zijn. Maar ik vindt het ook onze taak als leerkracht om daar heel duidelijk in te zijn om leerlingen dus de juiste vaardigheden aan te bieden zodat ze weten hoe ze daar na moeten kijken.*
P3	Financially	The foundation covers that when talking about money, the foundation said that they made a project and for the first period of the project, so from January till now the foundation will be the one to bear the costs. That makes it for schools pleasant because the costs are not for us. Only afterwards we will be responsible for the costs of the next year, so that is a consideration. *De stichting zit daarin als het over geld gaat, de stichting heeft gezegd van we maken daar een project van en in het eerst gedeelte van het project dus vanaf januari tot aan nu zijn wij degene die bekostigen. Dat maakt het voor de school natuurlijk wel prettig want het gaat niet van onze eigen rekening af. Vervolgens nemen wij nu de kosten voor volgend jaar wel voor onze rekening dus dat is een afweging.*
P2	No social influence	*Were you influenced by other schools?* Yes, a primary school in the neighborhood uses also the tablet PC, thereby there are several college schools that use the tablet, and recently we had a board meeting. Then you listen to their reactions and in comparison we are very excited but that has also to do with the kind of school and the concept your school has. *[En is er nog gekeken naar andere scholen?] Ja, onze buurtschool die doet het plus er zijn een paar collega scholen die het doen en we hebben onlangs een directieoverleg over gehad, heel minim maar dan beluister je ook reacties en dan zijn wij wel heel enthousiast maar dat heeft ook te maken met wat voor een school en wat voor een concept heb je.*
P7	Social influence	*But if other schools were going or already used the tablet PC did not have influence?* No we did not have contact with other schools. *[Maar het had dan niet veel invloed dat andere scholen het ook hadden of gingen gebruiken?] Nee we hebben niet echt contact gehad met andere scholen.*
P2	Parents no influence	*Did the environment like for instance parents influence the decision?* No we decided it ourselves. *[Had de omgeving zoals bijvoorbeeld ouders ook nog invloed?] Nee dat hebben we helemaal zelf gedaan.*
	Parents have influence	We decided together with the participation counsel. They all agreed, the parents were involved indirectly, but we already knew that parents would find it good. *We hebben het met de medezegenschapsraad kort gesloten. Die waren allemaal hartstikke voor en verder hebben wij ouders er eigenlijk zijlings bij betrokken maar we wisten eigenlijk al dat ouders het hartstikke leuk zouden vinden.*
P3	Training	*Did you provide a training?* Yes the people of Snappet gave training at school. They explained how to handle the Snappet, and how it works. *[Is er nog een training gegeven?]* Ja de mensen van Snappet zijn hier na school gekomen om mensen weg wijs te maken met hoe ga je ermee om, hoe werkt het en dat soort dingen.
P11	No training	No, the teachers have figured it out themselves and learned each other, what do you think of it, what did you discover, and which apps are usable, and which don't. When sharing this information with each other, everybody achieved a higher level very fast.

		Nee, ze hebben het door het zelf te ontdekken en elkaar geïnformeerd, van wat vind je ervan, en wat heb jij ontdekt, en welke apps zijn goed bruikbaar, en welke niet. Juist door met elkaar die informatie te delen is iedereen daardoor wel heel snel op een hoger niveau gekomen.
Implementation		
P2	Positive	So the experiences with the pilot are very positive, because next year we will work also with the group five and six. *Dus de ervaringen met de pilot zijn heel positief want we gaan komend schooljaar ook met de groepen vijf en zes aan de slag.*
P5	Negative	The experience that we have with the Snappet at this moment is not good, due to the closed system. *De ervaring die we nu hebben met de snappet is niet goed door het gesloten systeem.*
P8	Math, grammar or language	We use the tablet PC for math, language and grammar, the rest of the classes are made from the book. *We gebruiken hem bij rekenen, taal en spelling en alle andere vakken doen we vanuit de boeken.*
P10	Comprehensive reading	Grammar, math and comprehensive reading *Spelling, rekenen en begrijpend lezen.*
P8	To replace or besides books	We use the tablet PC for math, language and grammar, the rest of the classes are made from the book. *We gebruiken hem bij rekenen, taal en spelling en alle andere vakken doen we vanuit de boeken.*
P10	Extra work	We use the tablet PC more as extra assignments, so when you are done than you can make grammar on the tablet PC. And this is motivating for children to work faster because then they can work on the tablet PC. *We gebruiken de tablet meer als klaar opdracht dus ben je klaar dan mag je ook nog spelling op je tablet maken. En dit motiveert wel om door te werken want dan mogen ze op hun tablet werken.*
P8	An hour	That depends on the day but math takes about 45 minutest till an hour, language is often half an hour and grammar takes about 15 minutes. *Dat hangt wel van de dag af maar rekenen duurt meestal driekwartier tot een uur, taal duurt meestal een half uur en spelling duurt meestal een kwartier.*
	Group four	
P4	Math, grammar or language	We have math, language, grammar, geography, basically the tablet PC is used for everything. *We hebben rekenen,taal, spelling, wereld oriëntatie eigenlijk alles het wordt overal ingezet.*
P11	Additional courses	The tablet PC is mostly used in the language and math space but occasionally the tablet PC is also used in the eureka space that is our discovery space where all our core concepts are central. Thereby, I also used the tablet PC in the atelier. *Hij wordt voornamelijk in de taal, rekenruimte gebruikt af en toe wordt die ook in de eureka ruimte dat is onze ontdek ruimte waar onze kernconcepten centraal staan daar wordt die ook ingezet. Daarbij heb ik hem onlangs ook in het atelier ingezet.*
P11	Besides or extra work	It is an obvious tool to use besides all the other tools. *Nou het was eigenlijk een vanzelfsprekkend hulpmiddel om erbij te inzetten bij alle andere hulpmiddelen.*
P9	2,3 times a week	That varies; it is just how often I think about it per week because we are still in the test phase. Sometimes I use the tablet PC two or three times a week. *Dat is heel erg wisselend moet ik zeggen, het is net hoe vaak ik er aan denk per week omdat we nog echt bezig zijn met proefdraaien.Soms gebruik ik ze 2,3x in de week.*
P9	Everyday	When you have a day of five and a half hour I use the tablet PC for about one and a half hour. *Als je een volle dag van 5en halve uur hebt dan denk ik anderhalf uur.*
P1	Used in all classes	*The tablet PC is used in all classes?* Yes *[Hij wordt in alle klassen gebruikt?] Ja*
P5	Tablet PC does not work	I believe the first month things were not going the way it supposed to go. There were problems in the content and that had to be fixed. *Especially* WiFi

		problems? Yes problems with WiFi, charging but also that the content on the tablet PC was not working well. *Ja de eerste maand geloof ik dat dingen niet liepen in de content en dat is iedere keer recht ge+zet en verholpen. [Vooral WiFi problemen?]Ja WiFi problemen, oplaad problemen maar ook de inhoud op de tablet niet goed werkte*.
P3	Storage	Charging the tablet, every evening you have to connect the tablet PC to a charger. Then you have a big box for charging the tabletPC's, but where do you place that box. These are practical things, and the teacher should decouple the tablet PC's in the morning. When you do that for 34 children. *Het opladen van het apparaat, iedere avond moet je die dingen weer aan een schakelaar zetten. Dan heb je zon grote kast maar waar zet je die kast nu weer neer dat zijn praktische dingen die dan voorbij komen en de leerkracht moet smorgens alles loskopelen. Nougoed als je dat voor 34 kinderen moet doen.*
P8	Touch screen	Yes as I said we have a lot of network problems and sometimes it seems that the touch screen does not react properly. *Ja zoals ik al zei we hebben heel veel netwerk problemen gehad en af en toe lijkt het wel alsof het touch screen niet goed reageerd.*
P9	Flash	What we figured out during the year that a lot of programs with Flash are not working on the iPad unless you install another app but that is not as flexible and has less quality compared to android, so that is a disadvantage of the iPad. *En waar we in de loop van het jaar achter zijn gekomen is dat er heel veel programma's met flash niet werken op een iPad tenzij je er een aparte app opzet maar dan is het niet zo flexibel of van goede kwaliteit als het is op een android dus dat is wel het nadeel van een iPad.*
P1	Log in information	Only with the start up, but that has to do with the way of login information. *Alleen met het opstarten dat heeft nogal te maken met de manier van inloggegevens.*
P11	No problems	No, not really. *Nee, eigenlijk niet.*
P9	Enthusiasm	The motivation of children is big, bigger than when you work with textbooks or exercise books. So that is an advantage but hard to measure, because you cannot measure how much more motivation there is, but you see this when looking at the children. The concentration, the interaction and how they cooperate. *De motiviatie van kinderen is groot, groter dan als je met boeken en werkboeken aan de slag gaat. Dus dat is echt een groot pluspunt maar moeilijk te meten, want je kan bijna niet meten hoe veel meer de motivatie is maar dat zie je gewoon aan de kinderen. Aan de aandachtspanne, aan de interactie en hoe ze met elkaar samenwerken.*
P2	Improvement of children with a problem	Moreover we see that the weakest children work through the whole program. That is nice to see, that does not happen in a regular math lesson. *Sterker nog we zien dat de zwakste leerlingen die draaien gewoon het hele programma af. Dat is dus heel leuk om te zien dat gebeurt in een gewone rekenles niet.*
P2	Less correction work	The advantage of less correction work which you can put in preparing the lesson, analyzing, and les preparations. *voordeel van minder correctiewerk die je weer kunt steken in goede les voorbereiding, analyse, les voorbereidingen.*
P10	No switching	They do not have to switch constantly from their textbook to their exercise book. *Ze hoeven niet constant te schakelen door in hun boek te kijken en dan weer in hun schriftje.*
P7	Process more work	Children can also process much more. In an exercise book it takes longer to make all sums than on a tablet PC. *Ze kunnen ook veel meer stof verwerken. In een schriftje duurt langer om alle sommetjes te maken dan op een tablet.*
P7	Feedback children	I can never give direct feedback on the course material that children made as the tablet PC does. I now get to see immediately if something is good or wrong, and the children receive immediately the assignment back when they made it wrong. *Zoals ik net al uitlegde ik kan nooit zo direct feedback geven op de leerstof die kinderen hebben gemaakt en zo snel als de tablet het kan. Ik krijg meteen te zien of iets goed is of fout is en ze krijgen ok meteen hun werkje terug als ze hem niet*

		goed hebben gemaakt.
P7	Connection cito	Yes but I find also the learning goals, per learning goal you can see what their process is so when they scored A for a learning goal on the cito or a B score. *Ja maar ik vind ook de leerdoelen, per leedoel kan je zien wat zijn vorderingen zijn dus als ze en A score hebben voor dat leerdoel op cito gebied of een B score.*
P7	Adapted extra assignments	So it adapts automatically assignments to children. Yes that is ideal, because I cannot provide that as good as the tablet PC does. *Dus hij past automatisch de opdrachten op het kind aan. Ja dus dat is wel ideaal want dat kan ik ook niet zo goed verzorgen als een tablet.*
P7	Parents involved	That I e-mailed all parents, so they had their own inlog code and can see at home on the computer what the process of their child is. *Dat ik alle mail adressen van de ouders toe mailde en dat die een eigen inlog code krijgen en dat zei dan thuis op de computer kunnen kijken wat de vorderingen zijn van hun kind.*
P2	Teachers enthusiasm	How enthusiastic the teachers are. *hoe enthousiast de leerkrachten zijn*
P2	Expecting higher results	We aspect the results to be higher. *Wij verwachten dat de resultaten hoger zullen zijn*
P4	Mobility	You can take the iPad everywhere. You could, for instance say, you have kindergarten with 25 children and in the break you go outside for an hour. Then you say to three children that they can take the iPad with them, in the morning we talked about wheels of the bus so now you can make photos of all the wheels you see on the square. *die iPad kun je gewoon overal mee na toe nemen. Je zou dus kunnen zeggen, jij hebt een kleuterklas met 25 kleuters en je gaat altijd een uur buitenspelen. Dat je tegen 3 kinderen zegt jullie mogen een iPad meenemen, we hadden het vanochtend over de wielen van de bus dan mogen jullie foto's maken van alle wielen die je op het plein ziet.*
P4	Involve parents	I notice for instance, we communicate with Facebook we definitely need a tablet PC with that. Because when you are a teacher, you are busy with 25 infants but you were on the square and you take a picture and place it on Facebook. Then the parents see it and response 'ooh that is nice to see you being outside', 'that is nice to see you sitting by the sandpit'. We received this year a lot of reactions from parents, 'it is nice that you use Facebook this is the first time that I have insight in education'.
P4	Share in class	It is nice is that you can share pictures very fast with each other. Imagine we both have the same partial sum and you have solved it with a long division and I solved it by rote and both are correct that is something you can share. *Wat is daar nou mooi aan je kan nu dus beelden heel snel delen met elkaar. Stel je voor we hebben allebei dezelfde deelsom en jij hebt het als staartdeling gedaan en ik heb het uit het hoofd gedaan en allebei is goed dat kan je dan mooi laten zien.*
P11	Playfully learning	What I already indicated that children learn in a playful way. *Wat ik al aangaf dat kinderen op een speelse manier toch veel kunnen leren*
P9	Working together	Yes we purchased one tablet PC for two students and that stimulates them and they can learn from each other, that is the best thing. *Ja wij hebben er inderdaad een per 2 leerlingen aangeschaft en dat stimuleert ze wel heel erg en ze kunnen wel van elkaar leren, dat is gewoon het mooiste.*
P6	Works easy	Children can work very fast with the tablet PC they all know the tablet PC from home. *Kinderen kunnen er heel snel mee werken die kennen hem allemaal van thuis.*
P6	Keyboard	What they need to learn is the order of buttons on the keyboard but that is also when they work on the PC so that is not different from a tablet PC. They find it hard because they are searching. Yes when they work more often it goes automatically. *Wat ze wel moeten leren is de volgorde van de toetsen op het toetsenbord maar ook als ze aan een pc zitten dus dat maakt met de tablet niet uit. Dat vinden ze wel lastig dan zitten ze te zoeken. Ja als ze er vaker mee werken dan gaat dat vanzelf.*
P8	Posture	Yes we noticed that working on a tablet PC requires a new posture and then I

		mean only how they are sitting. Children sit in the most impossible manners behind their tablet PC this causes complains about their neck and back. *Ja, we hebben wel gemerkt dat het werken op de tablet voor de kinderen een nieuwe werkhouding vereist en dan bedoel ik echt puur zoals ze zitten. Ze zitten op de meest onmogelijke manieren achter die tablet waardoor ze soms ook nek en hoofd klachten krijgen.*
P8	Sun	And when for example the sun shines than all the curtains need to be closed otherwise they cannot see on the tablet PC. *En als de zon er bijvoorbeeld op schijnt moeten meteen alle gordijnen dicht anders zien ze niks op dat scherm.*
P3	No internet	Snappet asked what kind of problems occurs when using the tablet, when you use a tablet PC in school than you need an open structure, you should be able to go on the internet. Snappet promised to make this possible. *Daar vroeg Snappet naar waar loop je nou tegen aan en waar je tegen aan loopt, als je tablets gebruikt in een school optimaal veel doet dan moet het natuurlijk een open structuur kennen daar moet je ook mee op internet kunnen. Dat gaan zei nu ook maken is ons beloofd.*
P10	Bounded	What I find a big disadvantage of Snappet is that it is bounded. Every child has its own tablet PC and I like to see that the tablet PC can roulade trough the class. So it is not bounded to one child, but that you can log in, and that is not possible with Snappet. If find this troublesome. *En wat ik wel een heel groot nadeel vind aan Snappet is dat het naamsgebonden is. Ieder kind heeft zijn eigen tablet en ik zou graag tablets in de klas hebben en dat dat rouleert bijvoorbeeld. Dus dat het niet naamsgebonden maar dat je wel kan inloggen ofzo en dat kan niet bij Snappet. Dat is wel lastig.*
P10	Whole class teaching	But you have to teach everyone at once and this is something we want to get rid of. We want to work in groups that have various degrees and that will be difficult with Snappet. *maar je blijft wel klassikaal en frontaal les geven en daar gaan wij juist vanaf stappen. We gaan juist in heel veel niveau groepen werken en dat wordt gewoon heel lastig.*
P8	Less writing	There is another thing that is I find disappointing and that is a logical follow up. These children come from group three and learned there to read and write, we have to continue that writing. Making progress in writing in a notebook, which is caused by language, is replaced by a tablet PC and grammar which causes children to write less and that is something we really miss. Real writing is something they do not exercise anymore. *Er is nog een ding dat ik nog wel heel jammer vind en dat is gewoon een logisch vervolg. Deze kinderen komen vanaf groep 3 en hebben daar leren lezen en schrijven wij moeten met name dat schrijfonderwijs verder ontwikkelen. Dat kilometers maken in een schrijfschriftje dat komt taal wordt vervangen door een tablet en spelling en daardoor komt schrijven veel minder na voren en dat vinden we wel echt een gemis. Echt schrijven doen ze dadelijk niet meer ze typen alles.*
P8	Dyslexia	Children with dyslexia find the tablet PC to small they need a bigger tablet PC. For them the keyboard is very confusing because they already have difficulties with writing ‘poes’ and now they need to find the buttons first and then they are forgetting which word they needed to write down. So this student can work in his exercise book but math does he make on his tablet PC. *En kinderen met dyslectie vinden de tablet ook erg klein want die hebben ook meer baat bij grotere en voor hun is het toetsenbord heel onhandig omdat ze al moeite hebben met hoe schrijf je ‘poes’ en dan moeten ze ook nog gaan zoeken en dan weten ze al niet meer welk woord ze aan het opschrijven zijn. Dus die leerling mag dan ook lekker in zijn werkboek werken maar rekenen doet die dan wel op de tablet.*
P11	Vulnerability	Yes the vulnerability stays a disadvantage. You have to look out for that matter. *Ja de kwetsbaarheid blijft natuurlijk een nadeel. Je moet wel opletten wat dat betreft.*
P9	Writing	But you cannot write properly, actually a tablet PC is not made for being written on, so nor with a stylus. *Maar je kan niet netjes schrijven, eigenlijk is een tablet niet om op geschreven te*

		worden, dus ook niet met het pennetje.
P9	Conflict between children	Working together is difficult because they both want to work on the tablet PC. So sometimes this causes a conflict about who can write what on the tablet PC. You need them to learn to cooperate well and then you hope the iPad stimulates this. *Nouja het met tweetallen werken is wel lastig want ze willen er allebei op. Dus soms krijg je conflicten om wie wat mag typen op een iPad. Dus je moet gewoon leren om goed samen te werken en dan hoop je dat de iPad dat wel stimuleert.*
P4	Teacher	Teachers find it difficult to cancel a lesson from their language method and to replace it for an app. Because they start thinking about the coming exam and if children would pass it. That is a sense of security that people should approach differently and see it is a second step. But when I look around and see how it goes than I am satisfied as a director of this school. *Mensen vinden het best wel lastig om vanuit hun taalmethode een lesje te schrappen en te vervangen voor een app. Want dan denken ze ja straks komt wel die toets en zouden ze dan wel dat juiste gehad hebben. Dat is een stukje veiligheid die mensen anders moeten gaan benaderen en gaan inzien en dat is voor ons een tweede stap. Maar als ik hier bij ons kijk hoe het eigenlijk loopt dan ben ik heel erg tevreden als directeur van deze school.*
Confirmation		
P2	Proceed	No, we keep an eye on the future, so we continue to follow the competition and what the methods are doing, but for so far we stay working with Snappet till we find something better. *Nee, we houden het overgens wel in de gaten, dus we blijven wel volgen wat de concurrentie doet en wat de methodes gaan doen maar vooralsnog gaan wij met Snappet aan de slag en blijven we er net zolang mee werken todat we iets beters tegenkomen.*
P10	Stop	*Are you going to use the Snappet for group five and six?* No we stop. The pilot was fun but we go back to giving whole class teaching and we do not want that anymore. *[Gaan jullie dan mee met de snappet, voor groep 5 en 6?] Nee wij gaan daar niet mee verder. We vonden het een leuke pilot maar je gaat daar zo terug naar het klasikaale en frontale onderwijs waar we eigenlijk vanaf willen.*
P3	Doubt	Yes we see the closed system as a disadvantage therefore we asked if they can make one system. They promised us that this will be provided, so Snappet will be an open system. But that is absolutely a disadvantage if it stays closed than you have another reason of not purchasing the Snappet. *Becomes the Ipad than an option?* Yes, yes. *Ja wij zien het gesloten systeem wel als een nadeel vandaar dat we daar ook neer hebben gelegd maak er dan ook een systeem van. Ze hebben gezegd en beloofd dat dat ook gaat komen dus dat Snappet een open systeem wordt. Maar dat is een absoluut nadeel hoor als dat gesloten zou blijven dan heb je alweer een minder punt to aanschaf van Snappet dan wanneer het een open systeem is. [Dan komt een iPad weer meer in de buurt?] Ja Ja.*
P3	Snappet to expensive	When you start working with group four and five next year than you are 10.000 euro further, and when you want all classes to use the Snappet every year, count your profit, that is something we will not finance. Or something should happen so we gamble on that, something will happen that makes it payable. *Op het moment dat je volgend jaar met groep 4 en 5 aan de slag gaat dan ben je 10.000 euro verder zon beetje, en als je dat verder doorzet van ik wil dat met alle klassen doen, en ik wil dat elk jaar zo doen, dan tel uit je winst, dat gaan wij niet bekostigen. Of er moeten andere dingen gebeuren dus daar gokken we ook een beetje op, dat er iets gaat gebeuren waardoor het meer betaalbaar wordt.*
P11	More tablet PC's	I prefer to have more tablet PC's but there is a financial picture to it. *Het liefst zou ik er nog wel wat meer willen hebben er zit wel een financieel hoofdstuk aanvast.*

7.3 Appendix C

Logo school

Vragenlijst over het werken met een tablet

Deze vragenlijst gaat over hoe je jouw tablet computer gebruikt op school.

In alle vragen gaat het om jouw mening, er zijn dus geen foute antwoorden mogelijk. Alle antwoorden blijven anoniem, dus we weten nooit wie welk antwoord heeft gegeven. Antwoord daarom ook zo eerlijk mogelijk.

Veel succes met het invullen van de vragenlijst en als je nog vragen hebt kun je die altijd stellen. De onderzoeker helpt je graag!!!

1 (Zet een kruisje in het vakje dat je kiest)

1. Het is makkelijk om te leren hoe de tablet werkt.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Een beetje	Nee	NEE, absoluut niet

2. Het is gemakkelijk om de tablet te laten doen wat ik wil.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Een beetje	Nee	NEE, absoluut niet

3. Ik begrijp hoe de tablet werkt.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Een beetje	Nee	NEE, absoluut niet

4. Ik vind dat de tablet goed werkt.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Een beetje	Nee	NEE, absoluut niet

5. Het is gemakkelijk om heel goed te worden in het gebruik van de tablet.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Een beetje	Nee	NEE, absoluut niet

6. Ik vind de tablet gemakkelijk werken.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Een beetje	Nee	NEE, absoluut niet

2 (Zet een kruisje in het vakje dat je kiest)

1. Door de tablet heb ik sneller schoolwerk af.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Soms	Nee	NEE, absoluut niet

2. Met de tablet wordt mijn schoolwerk beter.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Een beetje	Nee	NEE, absoluut niet

3. Het is gemakkelijker om opdrachten op de tablet te maken dan in een schrift.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Een beetje	Nee	NEE, absoluut niet

4. Ik krijg meer schoolwerk af met de tablet dan met een boek en een schrift.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Een beetje	Nee	NEE, absoluut niet

5. Door de tablet werk ik slimmer.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Een beetje	Nee	NEE, absoluut niet

6. Ik vind het handig om de tablet te gebruiken voor school opdrachten.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Een beetje	Nee	NEE, absoluut niet

1. Door het gebruik van een tablet in de klas:
Haal ik meestal betere cijfers.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Soms	Nee	NEE, absoluut niet

3(Zet een kruisje in het vakje dat je kiest)

1 Ik vind het een goed idee om een tablet te gebruiken.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Een beetje	Nee	NEE, absoluut niet

2. Door het gebruik van een tablet is schoolwerk interessanter.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Een beetje	Nee	NEE, absoluut niet

3. Het is leuk om een tablet te gebruiken.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Een beetje	Nee	NEE, absoluut niet

4. Ik vind het werken met een tablet fijn.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Een beetje	Nee	NEE, absoluut niet

4(Zet een kruisje in het vakje dat je kiest)

1 Van klasgenoten heb ik goede verhalen gehoord over het leren met een tablet.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Een beetje	Nee	NEE, absoluut niet

2. Klasgenoten helpen elkaar met het gebruiken van een tablet.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Soms	Nee	NEE, absoluut niet

3. Ik heb het met andere klasgenoten over leuke apps voor het leren.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Soms	Nee	NEE, absoluut niet

4. Ik geef mijn vrienden/klasgenoten advies over het gebruik van een tablet.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Soms	Nee	NEE, absoluut niet

5. Ik vraag mijn vrienden/klasgenoten of juf om hulp als een tablet niet goed werkt.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Soms	Nee	NEE, absoluut niet

6. Mijn juffrouw gebruikt een tablet vaak in de klas.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Soms	Nee	NEE, absoluut niet

7. De juffrouw steunt me om te leren met een tablet.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Een beetje	Nee	NEE, absoluut niet

8. De juffrouw heeft vaak ideetjes over apps die we kunnen gebruiken op de tablet.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Soms	Nee	NEE, absoluut niet

S (Zet een kruisje in het vakje dat je kiest)

1. Ik vind het leuk om schoolwerk te maken.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Een beetje	Nee	NEE, absoluut niet

2. Ik vind het leuk om te leren op school.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Een beetje	Nee	NEE, absoluut niet

3. Ik vind school interessant.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Een beetje	Nee	NEE, absoluut niet

4. Ik ben vaak heel erg bezig met leren.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Soms	Nee	NEE, absoluut niet

5. De tijd vliegt als ik op school ben.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Een beetje	Nee	NEE, absoluut niet

6. Ik denk vaak aan andere dingen dan school.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Soms	Nee	NEE, absoluut niet

7. Ik verveel me vaak op school.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Soms	Nee	NEE, absoluut niet

8. Als ik op school ben hoop ik dat we snel uit zijn.

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Soms	Nee	NEE, absoluut niet

6 (Zet een kruisje in het vakje dat je kiest)

1. Heb je bij het maken van opdrachten met een tablet minder hulp nodig van de juffrouw dan met het maken van opdrachten uit het boek?

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Soms	Nee	NEE, absoluut niet

2. Maak je meer opgaven met een tablet dan in een schrift?

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Soms	Nee	NEE, absoluut niet

3. Stel je minder vragen aan de juffrouw over de opdrachten als je met een tablet werkt?

1	2	3	4	5
☐	☐	☐	☐	☐
JA, zeker	Ja	Soms	Nee	NEE, absoluut niet

4. Als de tablet niet goed werkt wie lost het probleem dan meestal op?

1	2	3
☐	☐	☐
Ik zelf	De juffrouw	Een klasgenootje

7 (Zet een kruisje in het vakje dat je kiest)

1. Ben je een jongen of een meisje?

☆ Jongen ☆ Meisje

2. Hou oud ben je?

3. Welke apparaten heb je thuis?

- ☐ Nintendo ds
- ☐ Nintendo Wii
- ☐ X-box
- ☐ Eigen Laptop
- ☐ Eigen mobiel
- ☐ Computer
- ☐ Tablet
- ☐ PlayStation
- ☐ PSP
- ☐ Anders……..

Hoevaak speel je op een spelcomputer?

1	2	3	4	5
☐	☐	☐	☐	☐
Iedere dag	Iedere week	Af en toe	Iedere maand	Nooit

Heel erg bedankt voor het invullen!

Je mag de vragenlijst nu weer inleveren.