21st century skills and the preparation for the labour market

A case study amongst students of a university of applied sciences in the Limburg region (NL)

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Abstract

In the 21st century (characterised as a knowledge society) other skills are needed in the labour market than before. Due to technological changes, increasingly complex and interactive tasks are expected to be completed by employees. Hence, it is essential that current students or future employees are properly trained for these new challenges in the labour market (like intense collaboration, communicating with others and solving difficult problems through critical thinking). The accompanying skills are called 21st century skills and the concept of 21st century skills is operationalized by Voogt and Roblin (2012) and includes collaboration, communication, problem solving and critical thinking. While learning these 21st century skills, the effectiveness of teachers plays an important role in order to get knowledge and skills across to students in their study. The central problem statement in this thesis was: what is the effect of 21st century skills and teacher effectiveness in relation to student’s preparation for the labour market.

To investigate this effect the data from the NSE (Nationale Studenten Enquete [National Student Survey]) were used. The NSE is a large scale national survey that measures the opinions of students about their education. Data over a period of four years (2014/2015/2016/2017) were analysed including 166 dependent 1st and 4th year surveys and 4898 4th year surveys.

In order to answer the central problem statement, four hypothesis were developed.

The first hypothesis looked at the development of 21st century skills over time at a university level. With the emergence of 21st century skills and the request for a broad adaptation in education it was expected that the level of 21st century skills had grown according to fourth year students. Fourth year students were selected because, they are closest to entering the labour market. Findings also confirmed that there was a significant (positive) difference between 21st century skill scores between 2014/2015 and 2017 according to fourth year students.

The second hypothesis continued on this finding and looked specifically at student development from their first year to their fourth year. It was expected that a student would grow during these four years with regard to 21st century skills. However, no significant difference was found for this dependent sample of students in their first and fourth year with regard to their development of 21st century skills over time.

The third hypothesis looked at the question if 21st century skills prepared students better for the labour market. As 21st century skills take such a predominant place in the qualifications to be successful in the labour market, possession of these 21st century skills are thought to lead to a better preparation for entering the labour market. Findings showed a positive direct relation between 21st century skills and preparation for the labour market. Students with a higher level of 21st century skills
were also better prepared for the labour market.

Finally, hypothesis four looked at teacher effectiveness. It was assumed that teacher effectiveness moderated the previously determined relationship between 21st century skills and the preparation for the labour market. Teachers play a vital role in the transfer of knowledge and skills but results showed no moderating effect on the relationship between 21st century skills and the preparation for the labour market. However, teacher effectiveness showed a significant direct effect on preparation for the labour market. This meant that teacher effectiveness, besides 21st century skills, had a direct effect on the preparation for the labour market. Together, 21st century skills and teacher effectiveness (including the control variables), explained 44% of the variance of preparation for the labour market.

Based on these findings, the main implications were divided into theoretical and practical implications. Theoretical implications included the elaboration of the concept, 21st century skills and its relation to other variables. Furthermore, the finding of an increase in 21st century skills scores among fourth year students in the past years is in line with theory which underlines the increased importance of the concept for educational institutions. Another theoretical implications is the difference which should be made, between measuring 21st century skills longitudinal (following a student from their first to their fourth year) or cross-sectional (fourth years only). Additionally the predicting value of the concept 21st century skills for the preparation for the labour market underlines the predominant role of the concept which is in line with other research. Finally, theory was advanced by finding that teacher effectiveness did not enhance (moderate) the relationship between 21st century skills and the preparation for the labour market but that teacher effectiveness is a direct predictor of the preparation for the labour market.

For practice the main implications were that Zuyd university of applied sciences, the case study organization, was living up to their mission statement of developing professionals. Over the past years an increase of 21st century skills was observed which is a key antecedent for the preparation for the labour market. However, on a detailed level, students measured in their first and fourth year of their study did not show an increase in 21st century skills. The corresponding practical implication is that this should raise some warning flags because, it may not be the case that students decrease in their collaboration, communication, problem solving and critical thinking skills during their study. The predictive value of 21st century skills and teacher effectiveness imply practically that 21st century skills need a central role in the curricula and that teacher effectiveness is an important part in educational service.

The results of this study showed that 21st century skills needed for jobs in the new economy should be taken seriously and should find their way further in higher education.

**Keywords:** 21st century skills, teacher effectiveness, preparation for the labour market, NSE
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1. Introduction

In this first chapter an introduction to the topic of this thesis is presented. This is followed by the corresponding problem statement and resulting from this the main research question.

1.1 Topic

Former president of the United States, Barack Obama, said during his State of Union speech on January 28th 2014 that the jobs of the new economy will require different, higher-order skills. The world we live in has been changing dramatically and the labour market requirements have changed as dramatically over the past decades (Soulé & Warrick, 2015). In particular, work conditions are undergoing significant changes because of processes that have been introduced to increase effectiveness and for example, the initiation of new ways to organise work (Nilsson & Ekberg, 2013). Characteristics of these conditions in current working life are competition, intensity, a faster pace, shorter lead times, part-time work and the expansion of different kinds of contracts, an increasing decentralisation of responsibility and, the rapid emergence and development of new knowledge and technologies (Brown, Hesketh, & Williams, 2003; Knight & Yorke, 2004; Nilsson, 2010). To prepare current students for a job in the 21st century, 21st century skills (Marilyn Binkley et al., 2012) are needed. According to Voogt and Roblin (2012), 21st century skills include collaboration, communication, problem solving and critical thinking. Collaboration, or working together provides the opportunity to understand someone own, as well as each other’s strengths and weaknesses which enables them to solve problems when they try to reach a common goal (Sahin, Ayar, & Adiguzel, 2014). Next, communication is essential and mentioned to be one of the most important human social functions (Greenaway, Wright, Willingham, Reynolds, & Haslam, 2015). In order to interact with others or as previously mentioned, to collaborate with others, communication is vital. Furthermore, problem solving is a skill which is of great importance in the current labour market. It is important to overcome barriers which lie between the current state and the desired state (Frensch & Funke, 2014). Finally, critical thinking is a skill that is needed, whereas without, one can easily be fooled into thinking that something is correct while the actual facts prove the contrary (Hughes & Lavery, 2015).

On the regional level of Limburg in the Netherlands it has been noted that also there, in a same dynamic as mentioned by Nilsson and Ekberg (2013); Brown et al. (2003); Knight and Yorke (2004) and Nilsson (2010), the labour market is radically changing (Stoffers, 2016). This implies that the future workforce needs to pursue new skills and a critical role is put aside for education. In the Limburg area, Zuyd university of applied sciences is the largest provider of higher vocational
education in the region with over 13,500 students spread over three different cities (Zuyd, 2017b). It holds a great amount of potential new entrants to the labour market. Yet, these new entrants need to be prepared well. The mission of Zuyd is “professionals develop themselves with Zuyd” (Zuyd, 2017a), referring to the preparation of professionals for the changing labour market. In education teachers play a vital role, especially in teaching and focussing on 21st century skills. The effectiveness of a teacher is highly context dependent (Kivunja, 2014) and focusses on effectively teaching a curricula. What is effective teaching in one setting does not necessarily need to be effective in another setting. However, a teacher needs to be effective in order to get the content across to the students. Hence, teacher effectiveness is an important criteria in students learning (Killen, 2015). Without effective teaching a curriculum can focus on 21st century skills but it will not come across to the students in an optimal manner.

1.2 Problem Statement

21st century skills have become highly important in order to prepare students, in an assumed knowledge society (Dede, 2010; Halász & Michel, 2011), for the rapidly changing labour market (Trilling & Fadel, 2009). “In the knowledge society, organizations operate in a global economy characterized by intense competition together with economic interdependence and collaboration.” (van Laar, van Deursen, van Dijk, & de Haan, 2017, p. 577). Through globalization (the production of goods and services), many jobs and in particular those in manufacturing have been automated or reallocated to industrialized countries (Levy & Murnane, 2012). Curricula of educational institutions in a knowledge society have to focus on new skills, but little is known about the relationship between these 21st century skills and the preparation for the labour market. Furthermore, teachers play an important role in effectively teaching these new skills. Again, little is known about the influence of effective teaching on educating 21st century skills in relation to the preparation for the labour market. A better understanding of these issues can help to confirm the importance of 21st century skills and teacher effectiveness in educational curricula in order to prepare students for their work in the 21st century.

This has led to the following explicit problem statement: “In the current knowledge society with regard to the preparation of students for the labour market, the role of 21st century skills and teacher effectiveness is not clear and needs to be researched in more detail”. From this problem statement the following main research question has been derived: “What is the effect of 21st century skills and teacher effectiveness in relation to students’ preparation for the labour market?”. Henceforth, in this thesis answers to the above problem statement and corresponding research questions will be given.
2. Literature

This chapter provides theoretical information on the variables used in this study and the corresponding gaps in the literature. First, 21st century skills in general are discussed. This will be followed by a detailed elaboration of the different aspects of 21st century skills being, collaboration, communication, problem solving and critical thinking as they are used in this study. Afterwards, theory around the preparation for the labour market is discoursed. Finally the effectiveness of teachers is discussed.

2.1 21st Century Skills

The world has dramatically changed in recent decades, and it is expected to have changed even more dramatically when today’s students enter the workforce (Soulé & Warrick, 2015). Technological changes have ensured that nowadays, people have very different social and economic lives and these lives remain changing at an accelerating pace. The society we live in at the present time is by many considered to be a knowledge society (Dede, 2010; Halász & Michel, 2011). Anderson (2008) defines a knowledge society as a society in which ideas and knowledge function as commodities. These commodities are used in order to combine the available knowledge to reach success. Hence, the growing impact of globalisation and the knowledge society, have led to argue that new skills are essential to be successful in the workplace (Lewin & McNicol, 2015). Through rising attention on competences for the knowledge society, schools and educational systems are called to make changes in their curricula and implement new skills (European Commission, 2002). This is once more stressed by the following statement: “Education and training systems must generate new skills, to respond to the nature of the new jobs which are expected to be created” (Commission for the European Communities, 2008, p. 4). Hence, looking towards the future it is also important to prepare for new jobs which are created by general development. Since knowledge takes such a vital place in the 21st century, and people need the related skills to enter the workforce, these skills are called 21st century skills (van Laar et al., 2017). Implementing 21st century skills in education is an important step in the adaptation of these new skills and competences in the workforce of the near future. 21st century skills are derived from the fact that the current workplace demands highly skilled employees who are confronted with increasingly complex and interactive tasks. Such employees need to be able to select knowledge efficiently from the amount of available information and apply such knowledge in an effective way. Employees need sufficient skills to be able to adapt to these changing requirements (Carnevale & Smith, 2013). Voogt and Roblin (2012) state that 21st century skills include collaboration, communication, problem solving and critical thinking. These skills are labelled 21st
century skills to specify that they are more related to the present economic and social developments than with the skills needed in the past century which was considered as an industrial mode of production (van Laar et al., 2017).

2.1.1 Skill – Collaboration

Collaborating with others is a skill which is a common requirement on the current labour market. In essence, collaboration is “working together which provides an experience to understand someone owns, as well as each other’s, strengths and weaknesses. This enables people to solve the problems they face and to reach a common goal.” (Sahin et al., 2014, p. 318). In the 21st century, due to the previous noted globalization it is even more important to collaborate with other (international) colleagues, than in the 20th century. Also virtual collaboration has become more important due to the technological changes of the past decades. Collaboration is a skill which is recognized to be of crucial importance in the learning process. In the socio-cultural theory of Vygotsky (1978) an important aspect is the “Zone of Proximal Development” which means that a learner cannot achieve an understanding of a new concept or idea unless he or she acquires help or feedback from a teacher or a peer. Peer interaction is an important way to facilitate cognitive growth and knowledge acquisition and furthermore, peer collaboration can help learners in problem solving (Vygotsky, 1978). Former research has shown that students who were engaged in collaborative learning enhanced their critical thinking and improved their problem-solving capabilities (Neo, 2003), which are desirable 21st century skills to transfer to the labour market. This is especially true nowadays where organizations are increasingly ran under the assumption that collaboration drives innovation and higher productivity (Cardon & Marshall, 2015). Within organizations it is important that employees can work together and collaborate in order to reach the organizational goals. However, collaboration is a complex exercise whereas different parties bring to collaborative exchanges distinct preferences, values, structures and even self-interested motives (Thomson & Perry, 2006). Research also indicates that problems and limitations in relation to collaborative work on the labour market lie in the lack of training in collaborative work (Forte & Flores, 2014). Hence, the training and development of collaboration at an early stage is an essential part. As Vygotsky (1978) mentions that collaboration is essential in learning, as important it is to learn to collaborate in order to use it in the 21st century workplace.

2.1.2 Skill - Communication

The ability to communicate with others is one of the most important human social functions (Greenaway et al., 2015). However, the conceptualization of communication is much harder than
would be expected at first instance. In this thesis communication is conceptualized as “a process involving two information-processing devices. One device modifies the physical environment of the other. As a result, the second device constructs representations similar to representations stored in the first device. Oral communication, for instance, is a modification by the speaker of the hearer’s acoustic environment, as a result of which the hearer entertains thoughts similar to the speaker’s own.” (Sperber & Wilson, 2013, p. 220). Whereas knowledge is key in the 21st century, communication takes an even more important place than it did before. Regarding oral communication different types exist, for example presenting and conversing (Brink & Costigan, 2015). Presenting is the predominant form of one-way communication in the workplace. Research also shows that communication is the fundamental mechanism that is used to inspire or stimulate movement among others (Boies, Fiset, & Gill, 2015). Hence this is very important for new entrants to the labour market who need to be able to collaborate and reach organizational goals. Next to presenting, in the context of the workplace, conversing might include various different behaviours such as explaining, describing, informing, advising, influencing, persuading, managing, resolving conflict, or negotiating (Brink & Costigan, 2015). Brink and Costigan (2015) refer to synchronous oral communication as conversing to set it apart from different types of synchronous communication as non-linguistic, written or electronic. To stress the importance of communication it is said that nearly every action in the workplace and in specific social and interpersonal interactions, involve some element of communication (Bonaccio, O’Reilly, O’Sullivan, & Chiocchio, 2016; Katz & Kahn, 1966). Therefore, the preparation and study of communication skills is important to deliver good graduates to the labour market.

2.1.3 Skill – Problem solving

The skill of problem solving is rather self-explanatory. However, effective problem-solving requires an accurate understanding of the problem (Newell & Simon, 1972). For this thesis the European centred definition of problem solving from Frensch and Funke (2014, p. 18) is used which follows: “Complex problem solving occurs to overcome barriers between a given state and a desired goal state by means of behavioural and/or cognitive, multistep activities. The given state, goal state, and barriers between given state and goal state are complex, change dynamically during problem solving, and are intransparent. The exact properties of the given state, goal state, and barriers are unknown to the solver at the outset. Complex problem solving implies the efficient interaction between a solver and the situational requirements of the task, and involves a solver’s cognitive, emotional, personal and social abilities and knowledge”. In the 21st century the labour market knows only little repetitive jobs and due to the dynamic job content of most jobs, problem solving is essential.
D’Zurilla and Sheedy (1992) have established that problem solving skills are one of the mind’s functions whose acquisition requires teaching, stressing the importance for this skill development in education. It should be noted however, that problem-solving is a fairly ‘generic’ skill and requires domain-specific knowledge for its realisation (Wheelahan, Buchanan, & Yu, 2015). This means that a student needs to be trained in solving problems in the specific context his or her education is training for. Research mentions that nowadays in the 21st century, across a wide range of jobs, people need to be able to engage in on the spot problem solving behaviour without the possibility to turn to well-defined organisational practices and routines and without sufficient time and resources to make decisions about problem solving measures by following rational models of problem solving (Neubert, Mainert, Kretzschmar, & Greiff, 2015). Possessing problem solving skills on the labour market is important since, the problem solving ability is specifically mentioned as a possible complement to the computerization of the workplace (Bresnahan, Brynjolfsson, & Hitt, 2002). Whereas, the workplace nowadays is increasingly computerized the skill of problem solving, which is a teachable skill (D’Zurilla & Sheedy, 1992), becomes more and more important to have.

2.1.4 Skill – Critical thinking

“If we lack critical thinking skills, we can easily be fooled into thinking that an argument is strong when the premises actually provide little or no support for the conclusion” (Hughes & Lavery, 2015, p. 6). Especially in a time where information is very easily accessible and where “fake news” is a daily occurrence, critical thinking is an essential skill. McPeck (2016) argues that the core meaning of critical thinking is the propensity and skill to engage in an activity with reflective scepticism. This reflective scepticism identifies the critical part which distinguishes critical thinking from merely thinking. Promoting students’ critical thinking has been an essential goal of higher education and nowadays there is a shift towards embedding critical thinking instruction within academic disciplines (Tiruneh, Verburgh, & Elen, 2014). Paul (1993), mentions that the acquisition of critical thinking skills such as the ability to identify central issues and assumptions in an argument, recognize important relationships, deduce conclusions from information or data provided, evaluate evidence or authority, etc., is considered vital for students who will encounter many challenges of adult life and who have to function effectively in a more and more complex world. However, it is argued that in education regular “subject matter classroom learning” only incidentally leads to a simple increase of critical thinking skills with students (Beyer, 2008). Beyer (2008) also argues that for the development of critical thinking skills, teaching strategies are needed which stimulate, encourage, and facilitate the acquisition and transfer of thinking skills. Hence, critical thinking has an important place within education, especially since the transfer of this skill to the labour market is crucial. Yet, critical
thinking in the workplace is not as easy as it sounds. In order to think effectively in organizational and corporate settings a person must understand besides the general logic of organizational structures, also the specific logic of the organization he or she is working in, which can deviate from general structures (Paul & Elder, 2013). Nonetheless, research shows that critical thinking is considered to be either very important or extremely important to the job in nearly all occupations and that it is a skill that is often seen by employers as a necessary requirement for success (Carnevale & Smith, 2013). A decent development of critical thinking is an important requirement to enter the labour market where the skill is in high demand, hence, it being part of the 21st century skills.

2.1.5 Hypothesis, 21st century skills

In line with the European Commission (2002), it is expected that schools and educational systems embrace these new, 21st century skills in their curricula. Consistent with the mission of Zuyd (2017a), the case organisation in this thesis, it is to be expected that the scores on 21st century skills increase over time due to a more specific focus on these 21st century skills which are needed for the labour market. Hence the following hypothesis was developed:

Hypothesis 1: There is a significant difference over time (2014/2015/2016/2017) on the variable “21st century skills” for fourth year students of higher vocational education.

Whereas the first hypothesis looks at the development of 21st century skills at a university level, the second hypothesis looks at this development from a student’s perspective. In a study program the student develops his or her skills which is in line with findings of e.g. Chew, Zain, and Hassan (2013). In the first year students enter the university as a novice and in the course of the study program they learn and hence, develop their skills. Therefore, the following hypothesis was developed:

Hypothesis 2: There is a significant difference between scores on the variable “21st century skills”, between students in their first year (propaedeutic phase) and their fourth year (main phase) of higher vocational education.

2.2 Preparation for the labour market

In essence one of the main missions of higher education is to prepare students for the labour market through the development of competencies, a combination of knowledge, skills and attitudes (Warn & Tranter, 2001). In assignment theory the concepts of educational and competencies mismatches are assumed to be closely related: educational mismatches imply competency mismatches (García-Aracil & Van der Velden, 2008). Hence, a good preparation for a job in the labour market of the 21st century starts with the right 21st century skills being thought in education. It is important that a student feels
confident to enter the labour market and has the feeling that he or she is well prepared. Kay and Greenhill (2011) mention that students in the 21st century also need 21st century skills, whereas the labour market is changing in a sense of more multidisciplinary focus and more technology, students need to be prepared for this. Research demonstrates that educational systems with a vocational orientation show to improve the allocation of students in the labour market (Bol & Van de Werfhorst, 2013). Hence, a focus during the study on contact with the labour market (internship, guest speakers, assignments for external parties etc.) may enhance a student’s perspective on this labour market. Current changes in education and labour market policy have led to universities being placed under increasing pressure to produce employable graduates (Bridgstock, 2009). In order for students to be successful on the labour market preparation is essential.

2.2.1 Hypothesis, preparation for the labour market

Preparing students for the labour market is the main mission of higher education and in line with Kay and Greenhill (2011) this means that students need 21st century skills. As Bol and Van de Werfhorst (2013) show, educational systems with a vocational orientation show to improve the preparation of students for the labour market. Whereas Zuyd university of applied sciences has a vocational orientation it is believed that the development of 21st century skills positively predicts students preparation for the labour market. Therefore, the following is hypothesized:

Hypothesis 3: “21st century skills” positively predicts “preparation for the labour market”

2.3 Teacher effectiveness

Adapting 21st century skills in the curriculum also demands a prominent role of the teacher to place a focus on these new skills. Teaching in an effective way is a crucial part yet, a very difficult part. Recently, research has come to the conclusion that effective teaching is not grounded in various universal laws, but there are numerous ways of being a good teacher and correspondingly teach effectively (Kivunja, 2014). Effectiveness of teaching is well explained by Marland (2007, p. 9) who mentions: “what teaching effectiveness is, varies according to time, place and the learners in the classroom. What is effective for one teacher will not work for another teacher. What is effective in Grade 1 will certainly not be effective in Grade 6 or Grade 12. What is effective in this era will not be effective in the next. Teaching effectiveness varies from teacher to teacher, class to class and from one era to the next”. From research it is known however, which characteristics of a teacher can assist in being effective, which is a wide range, yet the combination of these characteristics is highly contextual dependent. For a teacher to be effective he or she should be knowledgeable, enthusiastic, confident, optimistic, effective in communicating, committed, compassionate, curious, patient and
persistent, willing to share and collaborate, resourceful and inventive, well organized, ethical and reflective (Killen, 2015). Determining teacher effectiveness is still quite a hard job, because when is it said that a teacher is effective?

In the last thirty-five years, researchers have build-up a knowledge base on effective teaching in which the teacher behaviour functions as a predictor of student achievement (Muijs et al., 2014). Several different attributes of effective teaching have been identified from which the most important ones will be shortly discussed as presented by Muijs et al. (2014). A major difference can be made between quantity and quality of academic activity. The quantity elements associated with teacher effectiveness are for example the amount of the content but also the pace. Regarding the amount of content it is important that a teacher is knowledgeable about the subject at hand. In a setting like a university of applied sciences it is important that a teacher has knowledge especially about the professional practice the students are training for. Regarding the pace, Muijs & Reynolds (2011) find that a higher pace keeps students from becoming bored and helps them from showing misbehaviour.

The quality elements associated with teacher effectiveness are for example giving information (structuring), asking questions (soliciting), and providing feedback (reacting) (Muijs et al., 2014) hence, the involvement of a teacher. In detail it has been found that clarity of presentation by the teacher, a clear didactical skill, is a consistent correlate of student achievement (Seidel & Shavelson, 2007). Furthermore, one can think of the inspirational effect of teachers in the teacher-student relationship. Den Brok, Brekelmans, & Wubbels (2004) argue that the teacher-student relationship is an important component of measuring classroom climate. A positive climate, focussed on the behaviour of stakeholders, may contribute to teacher effectiveness whereas the quantity and quality can be delivered better in a sound learning climate, inspiring students. Overall these mentioned factors such as being knowledgeable about the subject at hand, having knowledge especially about the professional practice, involvement, didactical skills and inspiration are important contributors to teachers effectiveness. Teacher effectiveness is that important since research-based evidence strongly suggest that teacher effectiveness is a critical factor driving variation in student achievement (Hattie, 2003; Klassen & Tze, 2014).

2.3.1 Hypothesis, teacher effectiveness

In hypothesis 3 a positive relation between 21st century skills and preparation for the labour market is presented. The effectiveness of a teacher has been found to be a critical factor driving variation in student achievement (Hattie, 2003; Klassen & Tze, 2014). For 21st century skills the same dynamic as for other subject matter is expected, the more effective the teacher, the better the match between the content (21st century skills) and its usability for the labour market. Therefore, the combination of
21st century skills and effective teachers is believed to enhance (moderate) the relationship with preparation for the labour market. In line with this reasoning the following hypothesis was developed:

Hypothesis 4: “teacher effectiveness” moderates the relationship between “21st century skills” and the “preparation for the labour market”? 
3. Method

This chapter provides an outline of the methods used in this thesis. Firstly an overview is given of the method, main research questions and hypothesis. This is followed by an explanation of the data collection. This chapter continues with a detailed description of the operationalisation, the measures used, followed by the data-analysis. Finally the methodological limitations are discussed.

3.1 Method of the research

For this study, a quantitative deductive approach (Bahari, 2010) was followed. The data was gathered via surveys using survey methodology, measuring attitudes and rating behaviours (Groves, Fowler, Couper, Lepkowski, Singer & Tourangeau, 2009). In total N = 4981 surveys were used, with a large N making for robust answers. From the problem statement, introduced in the first chapter, the following main research questions were developed.

Main research question: What is the effect of 21st century skills and teacher effectiveness in relation to students’ preparation for the labour market?

In order to answer the main research questions, four different hypothesis were developed which are based on theory and the corresponding gaps in the literature.

Hypothesis 1: There is a significant difference over time (2014/2015/2016/2017) on the variable “21st century skills” for fourth year students of higher vocational education.

Hypothesis 2: There is a significant difference between scores on the variable “21st century skills”, between students in their first year (propaedeutic phase) and their fourth year (main phase) of higher vocational education.

Hypothesis 3: “21st century skills” positively predicts “preparation for the labour market”

Hypothesis 4: “teacher effectiveness” moderates the relationship between “21st century skills” and the “preparation for the labour market”
The research is also visualized in the following conceptual model (see figure 1).

![Conceptual Model]

**Figure 1, Conceptual Model**

### 3.2 Data collection

The instrument used in this thesis was the national student survey (NSE, [Nationale Studenten Enquete]) (See the NSE 2017 survey in appendix 1). The NSE is a large scale national survey that measures the opinions of students about their education, it was assumed in this thesis that the answers of students also reflect the levels of various measures. Objective information about study programs and universities contributes to quality and transparency of higher education. Based on this reasoning the NSE has been developed. All NVAO accredited study programs from universities of applied sciences and sciences in the Netherlands can participate in the study. In 2017, 70 universities of applied sciences and sciences participated and over 728.000 students were approached from which 38.6% have completed the survey (NSE, 2017). In specific this thesis made use of the data of responses to the NSE from students of Zuyd university of applied sciences in the years 2014, 2015, 2016 and 2017. In total 166 dependent 1st and 4th year surveys and 4898 4th year surveys were used.

The NSE is administered by Studiekeuze123 which is an independent cooperation between the ministry of education culture and sciences, students (ISO and LSVb) and higher education (Vereniging Hogescholen, VSNU en NRTO). Studiekeuze123 is completely financed by the ministry of education culture and sciences. The main reason to hold a student survey is to give students the opportunity to reflect upon their own study program. The output is used on the website of Studiekeuze123 to provide independent, complete and reliable information about study programs in the Netherlands (Studiekeuze123, 2017). Prospective students can get advise on the website of Studiekeuze123 about their match with different study programs and find out more about for example the experiences of current students in such a study program. Hence, their statement: “Voor en door studenten” [“By and for students”] (Studiekeuze123, 2017). Besides using the data from the NSE for Studiekeuze123, the data is also shared with the study programs in order for them to improve the program and understand what the students perceptions are of that particular study program.
3.3 Measures

This study focuses on the relationship between 21st century skills and the preparation for the labour market. Furthermore, teacher effectiveness is proposed to moderate this relationship. In addition the analysis controls for gender, age, the highest educational degree obtained before admission to the current study program and housing situation. The survey (NSE) is available in three languages being Dutch, English and German. The first question of the survey lets a student choose the preferred language in which the following questions will appear. For this thesis only the Likert scale scores are used and no open ended questions, hence, the possibility exists that the survey was conducted in different languages. Yet it does not affect the outcome for this thesis.

3.3.1 21st Century skills

21st century skills were measured by a scale computed specifically for this research from items of the NSE. The selected questions from the NSE are in line with the definition of 21st century skills by Voogt and Roblin (2012). The scale had a Cronbach alpha of $\alpha = .942$ which is good whereas, scores higher than .8 are preferable (Pallant, 2016). Exemplary items are: “Hoe tevreden ben je over de mate waarin een kritische houding wordt aangeleerd” or “Hoe tevreden ben je over de mate waarin jouw communicatieve vaardigheden (bijv. mondelinge presentaties, gespreksvoering) wordt aangeleerd”. The scale consists out of 6 items from the NSE (V17a, V17b, V17d, V17e, V18a, V18b [See the NSE 2017 survey in appendix 1]). All items were measured on a Likert scale with answer possibilities ranging from (1) “very dissatisfied” to (5) “very satisfied”.

3.3.2 Preparation for the labour market

Preparation for the labour market was also measured by a scale computed specifically for this research from items of the NSE. The selected questions from the NSE are in line with theory about practical implications in the study program in order to prepare students for the labour market (Bol & Van de Werfhorst, 2013; Kay & Greenhill, 2011). The scale had a Cronbach alpha of $\alpha = .936$ which is good (Pallant, 2016). Exemplary items are: “Hoe tevreden ben je over het opdoen van vaardigheden voor de beroepspraktijk?” or “Hoe tevreden ben je over het contact met de beroepspraktijk (bijv. stages, gast sprekers, opdrachten voor externen)?”. The scale consists out of 3 items from the NSE (V19a, V19b, V19c [See the NSE 2017 survey in appendix 1]). All items were measured on a Likert scale with answer possibilities ranging from (1) “very dissatisfied” to (5) “very satisfied”.
3.3.3 Teacher effectiveness

Teacher effectiveness was again measured by a scale computed specifically for this research from items of the NSE. The selected questions from the NSE are in line with theory about teacher effectiveness (Den Brok et al., 2004; Killen, 2015; Muijs et al., 2014; Seidel & Shavelson, 2007). The scale had a Cronbach alpha of $\alpha = .932$ which is good (Pallant, 2016). Exemplary items are: “How tevreden ben je over de inhoudelijke deskundigheid van docenten?” or “How tevreden ben je over de mate waarin docenten inspirerend zijn?”. The scale consists out of 9 items from the NSE (V20a, V20b, V20c, V20d, V20e, V20f, V20g, V20h, V20i [See the NSE 2017 survey in appendix 1]). All items were measured on a Likert scale with answer possibilities ranging from (1) “very dissatisfied” to (5) “very satisfied”.

3.3.4 Control variables

Finally this study included several control variables. Participants were asked about their gender and age. Gender was included whereas research shows a female advantage in education regarding performance (Voyer & Voyer, 2014). Hence, the questions raises if females also outperform males on the development of 21st century skills. Age was an open question without categories, participants could fill in their exact age. Age was chosen as a control variable to see if differences in age within a specific study year forms a significant differentiator. Additionally the highest educational degree obtained before admission to the current study program was included as a control variable. Research shows that students with a lower educational background find it more difficult to transfer to success than students with a high educational background (Jackson, 2013). Respondents could choose between the following options in the NSE: “Havo, Vwo, Mbo, HBO-propedeuse, Hbo-einddiploma of hbo-bachelor, Hbo-master, Universiteit-propedeuse in Nederland, Universiteit-bachelor in Nederland, Universiteit-doctoraal examen in Nederland, Universiteit-master in Nederland, Associate degree, Vooropleiding voortgezet onderwijs in het buitenland, Vooropleiding hoger Onderwijs in het buitenland, Colloquium doctum (21+ toets) toelatingsgesprek, Internationaal baccalaureaat, EVC-procedure / Op basis van eerder verworven competenties / werkervaring, Op andere gronden, N.v.t, Weet niet. Furthermore, the last variable which was included as a control variable was housing situation. Research shows that a different housing situation of a student e.g. at home or on campus may have an effect on educational development (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006). In the survey respondents could choose between: “Ik woon bij mijn ouders, Ik woon in een studentenflat of studentenwoning van een studentenhuisvestingsorganisatie, Ik woon in een particulier studentenhuis, Ik woon in een eigen woning of appartement (koop of huur), Anders”.
3.4 Data Analysis

3.4.1 Data analysis

For the analysis the statistical program SPSS (version 22) has been used. For testing the differences among fourth year students in various years (See hypothesis 1), ANOVA has been used. For testing the development of variables within a study program (See hypothesis 2) a paired sample T-test has been used. For testing a direct relationship and a moderation effect (See hypothesis 3 and 4) the add-on for SPSS called PROCESS by Hayes (2017) has been used.

3.4.2 Preliminary filtering

For this thesis the data of the NSE of students from Zuyd university of applied science was used. The main data file consisted out of data from 2013/2014/2015/2016/2017 including roughly 30,000 cases (filled in surveys). Since the NSE develops over time, some questions were added or changed and in the year 2013 there was no question yet about the study year, where a respondent could indicate in which year of the study program he or she was. Hence, it is not known to which study year answers of 2013 are allocated and therefore the data from 2013 was filtered out for further analyses. In order to map the development of 21st century skills (hypothesis 1) and its relation to the preparation for the labour market (hypotheses 3), moderated by teacher effectiveness (Hypothesis 4), student data of fourth year students were used. Fourth year students were selected since they are the closest to their labour market entry and they have, after nearly 4 year a better picture about their study program in relation to the research variables. Overall the amount of 4th year students used in the analyses were 2014 N = 1163, 2015 N = 1354, 2016 N = 1367 and in 2017 N = 1014 resulting in four independent samples. For hypothesis 2, looking at the development of 21st century skills within the study programs, student data needed to be extracted where one particular student filled in the survey in their first (propaedeutic) year and in their fourth year. In order to retrieve this data, several filter waves have been used on the data. By the exclusion of the 2013 data this meant that only the data from 2014-2017 was left, which were exactly the four years a student needs to finish a regular bachelor of applied sciences program. From the 2014-2017 data all first and fourth year students were filtered out and then matched, resulting in students who were in their first year in 2014 and in their fourth year in 2017, and who filled in the NSE in both these years. This resulted in a dependent sample of N = 83. During the analysis, pairwise deletion was applied. Overall, for this thesis 2 data sets were used: Dataset 1 (all fourth year students 2014-2017) with an N = 4898 and Dataset 2 (students year 1 in 2014 and year 4 in 2017) with an N = 83.
3.4.3 Preliminary analysis – assumptions

In line with the analysis, the assumptions (Field, 2013) of the different tests were checked for both datasets in order to avoid any violation. First, the sample size was checked, implying to check for generalizability. Consistent with literature (Tabachnick & Fidell, 2013), the sample size of 4898 (Dataset 1) and 83 (Dataset 2) was more than adequate for all hypothesis (formula used: N > 50 + 8M, where M is the number of independent variables). Second, the assumption for normality was checked by visual inspection of the normal probability plot and by using the skewness and kurtosis test. By visual inspection no major deviations from normality were detected. The skewness value provide an indication of the symmetry of the distribution whereas, kurtosis on the other hand provides information about the ‘peakedness’ of the distribution (Field, 2013). The skewness values for dataset 1 ranged from -.512 to -.680 and the kurtosis values ranged from .062 to 1.171, which implies no violation of normality. The skewness values for dataset 2 ranged from -.202 to -.845 and the kurtosis values ranged from -.058 to .570, which also implies no violation of normality. Third, the assumption of linearity and homoscedasticity were check by visual inspection of the scatter plots and normal p-plot. Homoscedasticity means that the variance of the residuals about the predicted dependent variable scores should not be related to the predicted scores (Pallant, 2016). The plots showed that there is a straight-line relationship and that there is no homoscedasticity. Since a moderation effect is research, the predictor variable in dataset 1 has been centred. This is done to eliminate problematic multicollinearity effects between first-order terms and higher order terms (Aiken, West, & Reno, 1991). By using the add-on PROCESS this is automatically done by running a moderation analysis (Field, 2013). Last the data was checked for outliers. Some extreme points were identified by SPSS in dataset 1 which means that those extend more than three box-lengths from the edge of the box (Pallant, 2016). In dataset 1, 2 extreme outliers were removed and the other identified outliers were manually inspected and could remain in the dataset whereas also the 5% trimmed mean barely deviated. In dataset 2, no outliers were removed.

3.5 Methodological limitations

For the analysis, first and fourth years students from the entire university were used, however, there may be differences within specific study programs. Furthermore, the lack of the “study year” question in the 2013 NSE resulted in deletion of this year and only from 2018 onwards, further analysis over time can be conducted with multiple groups. Finally, for the analysis of the development of variables over time on an individual student level data resulted in only 83 students (166 cases), from the +- 30.000 cases available. Also this number can be boosted with the inclusion of future NSE results.
4. Results

In this section the results of the analysis are presented. The results are formulated according to the developed hypothesis in this research. First, in section 4.1 general information about the samples and answers to the survey will be provided in a descriptives section. Continuing the results to hypothesis one are presented in section 4.2, the results to hypothesis two are presented in section 4.3 and finally the results to both hypothesis three and four are given in section 4.4.

4.1 Descriptives dataset 1 and 2

The descriptives were split per dataset and show the number of completed answers per variable, the mean score, the standard deviation and the correlations.

In dataset 1 the control variables gender, educational background and housing situation were nominal variables and were not represented by the mean but by the mode which was respectively 2, 1 and 1. This meant that there are mostly girls, the educational background was mostly Havo and that the housing situation was that students live mostly with their parents. The age of fourth year students was on average 23.32 years (SD = 3.6 years). With regard to 21st century skills the mean score was 3.83 (SD = 0.66) on a scale ranging from 1 to 5. Preparation for the labour market has a mean score of 3.71 (SD = 0.89) also on a scale ranging from 1 to 5. Finally, teacher effectiveness had a mean score of 3.58 (SD = 0.81) which was also measured on a scale ranging from 1 to 5. Furthermore, correlations for continuous and dichotomous variables were calculated with Pearson’s R and correlations for categorical variables were calculated with Spearman’s Rho. Overall the control variables seemed to correlate low or medium, besides gender which correlated significantly with preparation for the labour market (0.58**) and teacher effectiveness (0.58**). Furthermore, the three main variables 21st century skills, preparation for the labour market and teacher effectiveness correlate significantly with each other (See table 1).

In dataset 2 the data was measured at two moments in time, in 2014 when the student was in his/her first year and in 2017 when the student was in the fourth year. Also in dataset 2 the control variables were gender, educational background and housing situation. These were nominal variables and were not signified by the mean but by the mode which is respectively 2, 1 and 1. This had the same implications as in dataset 1 where there were mostly girls, the educational background was mostly Havo and that the housing situation was that students live mostly with their parents. The age of first year students was on average 21.80 years (SD = 3.74 years) and the age of fourth year students was on average 24.31 years (SD = 4.88). That the difference of students age between 2014-
2017 was not exactly four years can be explained by the time-frame in which the NSE can be completed. The NSE is open to complete for several weeks and hence a student does not have to fill in the survey at the same date every year. In 2014, 21st century skills had a mean score of 3.85 (SD = 0.60) and in 2017, 21st century skills had a mean score of 3.74 (SD = 0.65). The variable 21st century skills was measured on a scale ranging from 1 to 5. It was remarkable to see that for 21st century skills the mean score in year 4 was lower than for year 1. Also for this dataset correlations for continuous and dichotomous variables were calculated with Pearson’s R and correlations for categorical variables are calculated with Spearman’s Rho. In this case the control variables correlated among each other in the 2014, 2017 data and the main variable correlated also among each other but to a smaller amount in 2017 compared to 2014. These results are also summarized in table 2 which is presented hereafter.
### Table 1, Descriptives dataset 1 (All year 4 students in 2014-2017)

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</thead>
<tbody>
<tr>
<td>[1] Gender</td>
<td>4896</td>
<td>2&lt;sup&gt;1&lt;/sup&gt;</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[2] Educational background</td>
<td>4896</td>
<td>1&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.03*</td>
<td></td>
<td>~</td>
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</tr>
<tr>
<td>[3] Housing situation</td>
<td>4345</td>
<td>1&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.13**</td>
<td>0.19**</td>
<td>~</td>
<td></td>
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<tr>
<td>[4] Age</td>
<td>4898</td>
<td>23.32</td>
<td>3.60</td>
<td>-0.01**</td>
<td>0.29**</td>
<td>0.31**</td>
<td>~</td>
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<tr>
<td>[5] 21st century skills</td>
<td>4670</td>
<td>3.84</td>
<td>0.66</td>
<td>0.06**</td>
<td>0.04**</td>
<td>0.01</td>
<td>-0.05**</td>
<td>~</td>
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</tr>
<tr>
<td>[6] Preparation for the labour market</td>
<td>4563</td>
<td>3.71</td>
<td>0.89</td>
<td>0.58**</td>
<td>0.04**</td>
<td>0.03</td>
<td>-0.06**</td>
<td>0.62**</td>
<td>~</td>
<td></td>
</tr>
<tr>
<td>[7] Teacher effectiveness</td>
<td>4560</td>
<td>3.58</td>
<td>0.81</td>
<td>0.58**</td>
<td>0.10**</td>
<td>0.02</td>
<td>0.05**</td>
<td>0.59**</td>
<td>0.56**</td>
<td>~</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

<sup>1</sup> Mode
### Table 2, Descriptives dataset 2 (All students who were in year 1 in 2014 and year 4 in 2017)

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<tbody>
<tr>
<td><strong>2014</strong></td>
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</tr>
<tr>
<td>[1] Gender</td>
<td>84</td>
<td>2ⁱ</td>
<td>~</td>
<td>~</td>
<td>~</td>
<td>~</td>
<td>~</td>
<td>~</td>
<td>~</td>
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<td>~</td>
</tr>
<tr>
<td>[2] Educational background</td>
<td>84</td>
<td>1ⁱ</td>
<td>0.87**</td>
<td>~</td>
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<td>~</td>
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</tr>
<tr>
<td>[3] Housing situation</td>
<td>80</td>
<td>1ⁱ</td>
<td>0.95**</td>
<td>0.89**</td>
<td>~</td>
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<tr>
<td>[4] Age</td>
<td>84</td>
<td>21.80</td>
<td>3.74</td>
<td>0.31**</td>
<td>0.52**</td>
<td>0.57**</td>
<td>~</td>
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</tr>
<tr>
<td>[5] 21st century skills</td>
<td>83</td>
<td>3.85</td>
<td>0.60</td>
<td>-0.02</td>
<td>-0.13</td>
<td>-0.03</td>
<td>-0.19</td>
<td>~</td>
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<td><strong>2017</strong></td>
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<tr>
<td>[6] Gender</td>
<td>84</td>
<td>2ⁱ</td>
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<tr>
<td>[7] Educational background</td>
<td>84</td>
<td>1ⁱ</td>
<td>~</td>
<td>~</td>
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<td>~</td>
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<td>~</td>
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</tr>
<tr>
<td>[8] Housing situation</td>
<td>77</td>
<td>1ⁱ</td>
<td>0.93**</td>
<td>0.88**</td>
<td>0.90**</td>
<td>0.50**</td>
<td>0.04</td>
<td>0.93**</td>
<td>0.88**</td>
<td>~</td>
<td>~</td>
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<tr>
<td>[9] Age</td>
<td>84</td>
<td>24.31</td>
<td>4.88</td>
<td>0.16</td>
<td>0.17</td>
<td>0.16</td>
<td>0.11</td>
<td>0.11</td>
<td>0.17</td>
<td>0.36**</td>
<td>0.34**</td>
<td>~</td>
<td>~</td>
</tr>
<tr>
<td>[10] 21st century skills</td>
<td>83</td>
<td>3.74</td>
<td>0.65</td>
<td>-0.04</td>
<td>0.10</td>
<td>-0.11</td>
<td>-0.02</td>
<td>0.07</td>
<td>0.11</td>
<td>0.10</td>
<td>-0.16</td>
<td>-0.07</td>
<td>~</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

ⁱ Mode
4.2 Hypothesis 1

Hypothesis one stated that there is a significant difference over time (2014/2015/2016/2017) on the variable “21st century skills” for fourth year students of higher vocational education. A one-way between-groups analysis of variance was conducted to explore the impact of time (2014-2017) on levels of 21st century skills as measured by the NSE. Fourth year students were grouped according to the year they were fourth year students (year 1: 2014, year 2: 2015, year 3: 2016 and year 4: 2017). For 21st century skills there was a statistically significant difference at P < 0.05 between the four different years: F (3, 4664) = 5.6, p = 0.001. Post-hoc comparisons using the Tukey HSD test indicated that the mean score in year 1: 2014 (M = 3.81, SD = 0.66) was significantly different from year 4: 2017 (M = 3.90, SD = 0.64). Also year 2: 2015 (M = 3.80, SD = 0.66) was significantly different from year 4: 2017. Year 3: 2016 (M = 3.86, SD = 0.66) did not differ significantly from either year 1: 2014, year 2: 2015 or year 4: 2016. Also year 1: 2014 did not differ significantly from year 2: 2015.

4.3 Hypothesis 2

Hypothesis 2 stated there is a significant difference between scores on the variables “21st century skills” between students in their first year (propaedeutic phase) and their fourth year (main phase) of higher vocational education. A paired-samples t-test was conducted to evaluate the difference in scores over time. For 21st century skills there was no statistically significant difference between scores from T1: 2014 (M = 3.85, SD = 0.60) to T2: 2017 (M = 3.75, SD = 0.65), t (82) = 1.11, p = 0.296.

4.4 Hypothesis 3 and 4

For hypothesis three and four the SPSS add-on from Hayes (2017), PROCESS was used. Model 1 in PROCESS was used to analyse the proposed regression (hypothesis 3) and moderation (hypothesis 4). As mentioned, preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity and homoscedasticity. Hypothesis three stated that 21st century skills positively predicts preparation for the labour market after controlling for gender, educational background, housing situation and age. 21st century skills positively predicted preparation for the labour market (beta = 0.58, p < 0.001). Hypothesis four stated that teacher effectiveness moderates the relationship between 21st century skills and the preparation for the labour market after controlling for gender, educational background, housing situation and age. The total variance explained by the model as a whole was 44.35%, F (7, 4270) = 523.74, p < 0.001. Both, 21st century skills (beta = 0.58, p < 0.001) and teacher effectiveness
(beta = 0.34, p < 0.001) were statistical significant. From the control variables both housing situation (beta = 0.02, p < 0.05) and age (beta = -0.02, p < 0.001) were statistical significant. The interaction of 21st century skills * teacher effectiveness was not statistically significant (beta = 0.00, p = 0.857). The R squared change by the inclusion of the interaction is 0.00%, F(1, 4270) = 0.03, p = 0.857. An overview of the results is presented in table 3.

<table>
<thead>
<tr>
<th></th>
<th>b</th>
<th>SE B</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>4.02</td>
<td>0.096</td>
<td>41.90</td>
<td>P &lt; 0.001</td>
</tr>
<tr>
<td>(3.84, 4.21)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>21st century skills</td>
<td>0.58</td>
<td>0.021</td>
<td>27.54</td>
<td>P &lt; 0.001</td>
</tr>
<tr>
<td>(0.53, 0.62)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Teacher effectiveness</td>
<td>0.34</td>
<td>0.018</td>
<td>18.83</td>
<td>P &lt; 0.001</td>
</tr>
<tr>
<td>(0.30, 0.37)</td>
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<td></td>
</tr>
<tr>
<td>21st century skills * Teacher effectiveness</td>
<td>0.00</td>
<td>0.014</td>
<td>0.18</td>
<td>P = 0.857</td>
</tr>
<tr>
<td>(-0.02, 0.03)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>0.01</td>
<td>0.021</td>
<td>0.36</td>
<td>P = 0.720</td>
</tr>
<tr>
<td>(-0.03, 0.05)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational background</td>
<td>0.00</td>
<td>0.004</td>
<td>0.31</td>
<td>P = 0.759</td>
</tr>
<tr>
<td>(-0.01, 0.01)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing situation</td>
<td>0.02</td>
<td>0.008</td>
<td>2.41</td>
<td>P &lt; 0.050</td>
</tr>
<tr>
<td>(0.00, 0.04)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.02</td>
<td>0.004</td>
<td>-3.93</td>
<td>P &lt; 0.001</td>
</tr>
<tr>
<td>(-0.02, -0.00)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: R² = 0.44
N = 4278
Confidence intervals and standard errors based on 1000 bootstrap samples

With these results the following conceptual model has been created:
Figure 2, Conceptual model based on the results including control variables
5. Conclusion and Discussion

In this chapter the conclusion and discussion are presented, accompanied by recommendations for practice and recommendations for future research. First the conclusion is distinctively different from the discussion, wherein the conclusion the prove or disprove of the hypothesis is given. In the discussion the focus is on the implications these results have. In the recommendations for practice, practical recommendations based on the implications will be given. This chapter will be closed with recommendations for future research.

5.1 Conclusion

In the present day knowledge society (Anderson, 2008) knowledge functions as a commodity. Educational systems need to make changes in their curricula and implement new skills, called 21st century skills (Commission for the European Communities, 2008, p. 4; van Laar et al., 2017). In the case study of this thesis, Zuyd university of applied sciences has been investigated. In order to investigate the development of 21st century skills as perceived by their students over time, the following hypothesis was developed:

Hypothesis 1: There is a significant difference over time (2014/2015/2016/2017) on the variable “21st century skills” for fourth year students of higher vocational education.

The results showed that there was a significant difference over time. However, the significant difference was only present between the years 2014/2015 – 2017. Overall, a significant positive improvement over time of 21st century skills was noted. Hence, accepting hypothesis 1.

Soulé and Warrick (2015) argue that the world has dramatically changed and will be changed even more when today’s students enter the workforce. Consequently, future employees need sufficient skills to be able to adapt to changing environments (Carnevale & Smith, 2013). In hypothesis 1, this research looked into the development of the educational institution over time with regard to 21st century skills through the eyes of fourth year students. However, it is also important to look on a more detailed level besides the educational institution, the level of the student. Therefore, it was questioned if students noticed a development over time on 21st century skills between their first and fourth year of study and the following hypothesis was developed:

Hypothesis 2: There is a significant difference between scores on the variable “21st century skills”, between students in their first year (propaedeutic phase) and their fourth year (main phase) of higher vocational education.

31
The results showed that there was not a significant difference between scores in students first and fourth year. More remarkably is that the actual score of 21st century skills decreased over time from students’ first year in 2014 to their fourth year in 2017. However, this was a non-significant difference and therefore, in essence hypothesis 2 is rejected.

As Kay and Greenhill (2011) argue, 21st century students need 21st century skills in order to be prepared for the labour market. Whereas, the core mission of higher education is to prepare students for the labour market (Warn & Tranter, 2001), this study investigated if 21st century skills also lead to a better preparation for the labour market. For this the following hypothesis was developed:

Hypothesis 3: “21st century skills” positively predicts “preparation for the labour market”

The results showed that 21st century skills positively predict the preparation for the labour market and hence, hypothesis 3 is accepted.

Finally the effectiveness of teachers was taking into account whereas, teacher effectiveness is closely related to student achievement (Hattie, 2003; Muijs et al., 2014). As teachers are very important their effectiveness is argued to moderate the relationship between 21st century skills and the preparation for the labour market. Also for this reasoning a hypothesis was developed:

Hypothesis 4: “teacher effectiveness” moderates the relationship between “21st century skills” and the “preparation for the labour market”

The results showed that there is no moderation effect and hence, hypothesis 4 is rejected. The findings did show however, that teacher effectiveness has a significant direct effect on the preparation for the labour market. Hence, the conceptual model should look as presented in figure 2. For both hypothesis 3 and 4 the control variables, gender, educational background, housing situation and age have been taken into account. For housing situation and age a significant effect has been found.

5.2 Discussion

In this discussion the implications of the conclusion are discussed and specified to both theoretical and practical implications. To start, an implication for theory is the contribution of this research to the concept of 21st century skills and its relations to other variables. Hypothesis one and two looked in detail at 21st century skills as defined by (Voogt & Roblin, 2012) at a university and a student level. In particular, the aspects collaboration, communication, problem solving and critical thinking were discussed in this thesis which are general accepted components of
21st century skills. However, the focus on only these four aspects of 21st century skills may have affected the results. The potential limitation of this is also further discussed in the continuation of this chapter.

The acceptance of hypothesis one implies that 21st century skills do play an important role. A significant difference in former years, 2014/2015 and now, 2017 is visible in which the score of 21st century skills has grown. This is in line with theory on 21st century skills (van Laar et al., 2017) which implies that these skills should receive more attention. Furthermore, this implies that the focus on educational systems and schools, which has been brought forward by the European Commission (2002) is acknowledged. For practice the acceptance of hypothesis one implies that the educational institution is found to have developed a higher focus on 21st century skills in the past four years as perceived by their fourth year students. In that perspective they are living up to their mission statement: “professionals develop themselves with Zuyd” (Zuyd, 2017a). Nevertheless, a continuing focus to improve should remain.

The rejection of hypothesis two gives a slightly contradicting view to the acceptance of hypothesis one. It implies that students who went through their four years of education, from first year student to fourth year student do not experience an increase in 21st century skills. For theory this implies that a difference should be made between evaluating 21st century skills at a level of school leavers (fourth year students) or at a level where you follow a student’s development from year one to year 4. For practice the rejection of hypothesis two implies that the educational institution should raise some warning flags. If the average score of 21st century skills drops during the time of study it is necessary to look critically at the causes of this drop. It may not be the case that students decrease in their collaboration, communication, problem solving and critical thinking skills during their study.

The acceptance of hypothesis three implies that 21st century skills is a true predictor of the preparation for the labour market. This is in line with theory which argues that the main focus of higher education is to prepare students for the labour market (Warn & Tranter, 2001). This implies further that the prominent role of 21st century skills (Bonaccio et al., 2016; Cardon & Marshall, 2015; Hughes & Lavery, 2015; Neubert et al., 2015) is essential for a good preparation for the labour market. For practice this implies that delivering graduates to the labour market who are prepared for the constantly changing environment as identified by Soulé and Warrick (2015) need to be trained in 21st century skills. Collaboration, communication, problem solving and critical thinking skills should be central in the curricula in order to enhance the preparation for the labour market.

Finally, the rejection of hypothesis four shows that teacher effectiveness does not moderate the relationship between 21st century skills and preparation for the labour market. It implies for theory that in this case, teacher effectiveness does not enhance the strength of the relationship between 21st century skills and preparation for the labour market. Yet, the strong direct relationship of
teacher effectiveness on preparation for the labour market which is found, is in line with former research (Hattie, 2003; Muijs et al., 2014). For practice this implies that the effectiveness of a teacher in front of a class does not enhance the effect of 21st century skills on preparation for the labour market. Nevertheless, a teacher still needs to be effective whereas it has a direct influence on the preparation for the labour market. To be effective depends highly on the context (Kivunja, 2014) but it is an essential part in education.

Finally, the increase in 21st century skills scores over the past four years of school leavers, the direct effects of 21st century skills and teacher effectiveness on preparation for the labour market, hopefully show that higher-order skills needed for jobs in the new economy as presented by former president of the United States, Barack Obama are taken seriously and find their way in higher education.

5.3 Recommendations for practice

Based on the implications for practice the following recommendations have come forward and in specific for Zuyd university of applied sciences which was the case study of this thesis. It is recommended to keep monitoring the development of 21st century skills whereas it is crucial for graduates in the labour market. Specific attention should be given to the development of 21st century skills within the four years of a study, whereas hypothesis 2 was rejected. The continuation of the NSE is a crucial aspect in this. Furthermore, it is recommended to make more use out of the NSE data. 21st century skills are important nowadays and it receives a lot of attention. Improving 21st century scores university wide which is related to the mission statement should receive more attention. Likewise, there are multiple other variables measured in the NSE where analysis can focus on, as for example internships. Internships form a back-bone of higher vocational education in the Netherlands and the topic receives numerous attention both in theory and in practice. In essence it can become “big data” management which can help to improve education but also emphasize the effects of decisions made and successes reached.

It is also recommended to keep focussing on both 21st century skills and teacher effectiveness in curricula and in specific during the development of curricula. Both variables show to predict preparation for the labour market which is the core of higher education. From theory it is know that a teacher can be effective in one setting but he or she is not at all effective in another setting. Hence, it is recommended that an important role is put aside for HR, where the selection of the right teacher for the right environment is crucial. In best cases, future colleague teachers or management of the study program should join during the selection process as they have a good insight into the contextual factors of a study program.
Finally, it is also recommended to put the results of the NSE in perspective. University wide the sample size is quite impressive but as soon as a filter is applied, the reduction in usable data is enormous. From the independent sample (+4900) to a dependent sample (+80) is a sheer drop. Filtered on study program the drop in usable data continuous. Hence, it should be worthwhile to base decision on the NSE results because it can, not because it has to.

5.4 Limitations and recommendations for future research

This study is also limited and accordingly, several areas for future research have been identified. Frist of all, the sample size of 83 for the dependent study is relatively small. This also limits the generalizability of the findings for the development of 21st century skills from students in year 1 to 4. Future, preferably longitudinal, research is needed to understand better the differences. This can also give more insight in the difference between accepting hypothesis 1 and rejecting hypothesis 2.

Another limitation is the lack of study program specification. It was not possible to make splits in the data per study program and keep enough data to do the analysis. It is also recommended that in future research this study is replicated but then for individual study programs, when there is sufficient data. This may bring forward interesting differences between study programs in different work fields. It directly highlights study programs which need to look at their curricula.

Regarding the measurement of 21st century skills in this study, the overview of Voogt and Roblin (2012) was used. However, due to nature of the NSE, a question on ICT literacy or creativity which is found by Voogt and Roblin (2012) in most frameworks of 21st century skills, is absent. Furture research should include these skills also in their set-up. In particular for Zuyd university of applied sciences this could be measured through an additional question in other student surveys if the setting of the research is explicitly defined.

Another limitation is the common method bias, which is the systematic variance in measurement, attributable to the specific method used to measure two or more variables (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). This study used an all Likert scale questiones to measure all the variables. Hence, one method was used to measure several variables and therefore, the findings are not immune to common method bias.

Finally, the scores which were close to 4, were already quite high on the scale from 1-5 leaving less room for measurable improvement. Nevertheless, it would be highly interesting for future research to replicate this study at different universities. Through this way a benchmark can be created which students but also the universities themselves can use while making decisions.
6. Bibliography


Appendix 1

Vragenlijst Nationale Studenten Enquête 2017

V1. Selecteer een taal / Select a language:
1 Nederlands
2 English
3 Deutch

A. Achtergrondkenmerken

V2. Klopt het dat je staat ingeschreven aan de <bachelor/master> <cboho> <instelling> in <locatie>?
1 Ja, deze gegevens kloppen (naar vóó)
2 Nee, deze gegevens kloppen niet

V2a. Welk deel van de getoonde informatie klopt niet?
1 Ba / Na
2 Opleidingsnaam
3 Instellingnaam
4 Locatie

V3. Wat voor soort opleiding volg je? (Geef je hoofdstudie aan)
1 Bachelor
2 Master (hbo: ook voortgezet opleiding)
3 Associate degree
4 Postbaccalaureate
5 Postingeel hbo
7 Anders <Einde vragenlijst: Slottekst 1>

V4. Volg je deze opleiding aan een universiteit of hogeschool?
1 Hogeschool
2 Universiteit
3 Anders

V5. Aan welke <hogeschool/universiteit> volg je deze opleiding?
<lijst instellingen met optie 'Andere universiteit/hogeschool' als open vraag>

V6. Welke opleiding volg je aan de <naam instelling>?
<lijst opleidingen binnen aangedragen instelling met optie 'Andere opleiding' als open vraag; als
V6='Andere' dan deze vraag altijd open houden>

V7. In welke stad volg je deze opleiding?
<lijst steden waar de opleiding wordt verzorgd; deze vraag niet stellen als V5='Andere'>

V8. Volg je deze opleiding in volledig, deelstaat of huur?
1 Volledig
2 Deelstaat
3 Dasaal

V9. In welk studiejaar zit je? Let op! Vul het studiejaar in van het jaar waarin je de meeste vakken volgt. Associate Degree, Bachelor en Master worden gezien als aparte opleidingen. We tellen hier weer op de volgende 1. <Associate Degree 1 -2> bachelor 1-4; master 1-3; postbaccalaureate hbo 1-3; postingeel wo 1-3> <niet van toepassing>

V10. Wanneer ben je aan deze opleiding begonnen?
Datum <dag/maand/jaar>
Wij zijn ons bewust van het maatschappelijke gesprek over genderidentiteit. We hebben ervoor gekozen om het beleid van de Rijkseveiligheid te volgen met betrekking tot de Basisregistratie Persoonsgegevens en daarom de onderstaande twee opties te geven. Als je deze vraag niet wilt invullen, kun je deze vraag overslaan.

V11. Je bent een:
1 Man
2 Vrouw

V12. Wat was je leeftijd op 31 december 2016?
... Jaar <12-99>

V13. Met welk diploma ben je toegelaten tot je huidige opleiding?
01 Havo
02 Vwo
03 Mbo
04 Hbo-propedeuse
05 Hbo-einddiploma of hbo-bachelor
06 Hbo-master
07 Universiteit – propedeuse in Nederland
08 Universiteit – bachelor in Nederland
09 Universiteit – doctoraals examen in Nederland
10 Universiteit – master in Nederland
11 Associate degree
12 Vooropleiding voortgezet onderwijs in het buitenland
13 Vooropleiding hoger onderwijs in het buitenland
14 Colloquium doctum (21- toets) /toelatingsgesprek
15 Internationaal becaulreert
16 EVC-procedure / Op basis van eerder verworven competenties/werkervaring
17 Op andere gronden, namelijk <vrij tekstveld>
98 N.V.T.
99 Weet niet

Woonomstandigheden (niet afstandsonderwijs, dual en deeltijd)

V14. Hoe is jouw woonomstandigheden?
1 Ik woon bij mijn ouders
2 Ik woon in een studentenflat of studentenwoning van een studentenhuishuishoudingsorganisatie
3 Ik woon in een particulier studentenhuis
4 Ik woon in een eigen woning of appartement (koop of huur)
5 Anders
8. Basisvragenlijst

1. Algemene oordeelen (alleen)
   V15. We willen je graag vragen hoe jij je studie in het algemeen beoordeelt. Geef alsblijkt hieronder aan hoe tevreden je bent over: <1 t/m 5> 1 = zeer ontevreden; 5 = zeer tevreden; 6 = n.v.t.>
   Je studie in het algemeen

2. De inhoud en opzet van het onderwijs (alleen)
   V17. De volgende vragen gaan over de inhoud en opzet van het onderwijs bij jouw opleiding. Geef aan hoe tevreden je bent over: <1 t/m 5> 1 = zeer ontevreden; 5 = zeer tevreden; 6 = n.v.t.>
   a. Het niveau van je opleiding
   b. De aansluiting van de inhoud bij het beeld dat je van je opleiding had
   c. De aansluiting van de opleiding bij je vooropleiding
d. De mate waarin de inhoud van je opleiding stimulerend is
e. De aansluiting van de inhoud van je opleiding bij actuele ontwikkelingen
   f. De samenhang tussen de verschillende onderdelen van je opleiding
g. De in jouw opleiding gehanteerde werkvormen
   i. De inhoudelijke kwaliteit van het studiemateriaal
   j. De aansluiting bij je werkervaring (alleen dual, deeltijd en afstandsonderwijs)
k. De mate waarin je het geleerde kunt toepassen in je baan (alleen dual, deeltijd en afstandsonderwijs)

3. Verworven algemene vaardigheden (alleen)
   V19. De volgende vragen gaan over de algemene vaardigheden die je binnen je opleiding opdoet. Geef aan hoe tevreden je bent over de mate waarin jou de volgende algemene vaardigheden worden aangeleerd: <1 t/m 5> 1 = zeer ontevreden; 5 = zeer tevreden; 6 = n.v.t.>
   a. Het aanleren van een kritische houding
   b. Probleemoplossend vermogen
c. Het onderbouwen van conclusies
   d. Communicatieve vaardigheden (bijv. mondelinge presentaties, gespreksvoering)
   e. Samenwerken met anderen
   f. Argumenteren/redeneren
4. (Aan WO-studenten) Verworven wetenschappelijke vaardigheden
V19. De volgende vragen gaan over de wetenschappelijke vaardigheden die je binnen je opleiding opdoet. Geef aan hoe tevreden je bent over de mate waarin jou de volgende wetenschappelijke vaardigheden worden aangeleerd: <1 t/m 5; 1=zeer ontevreden; 5=zeer tevreden; 6=n.v.t.>
   a Analytisch denken
   b Het kritisch beoordelen van wetenschappelijk werk
   c Het schrijven van wetenschappelijke artikelen
   d Methoden en technieken van onderzoek
   e Het doen van onderzoek

4. (Aan HBO-studenten) Praktijkgericht onderzoek
V19. De volgende vragen gaan over het onderzoekend vermogen dat je binnen je opleiding opdoet. Geef aan hoe tevreden je bent over de mate waarin jou de volgende aspecten van onderzoekend vermogen worden aangeleerd: <1 t/m 5; 1=zeer ontevreden; 5=zeer tevreden; 6=n.v.t.>
   a Analytisch denken
   b Het kritisch beoordelen van praktijkgericht onderzoek
   c Het schrijfelijk rapporteren over praktijkgericht onderzoek
   d Methoden en technieken van praktijkgericht onderzoek
   e Het doen van praktijkgericht onderzoek

3a. Voorbereiding op de beroepsloopbaan [vrijdag]
V20. De volgende vragen gaan over de voorbereiding op je beroepsloopbaan. Geef aan hoe tevreden je bent over: <1 t/m 5; 1=zeer ontevreden; 5=zeer tevreden; 6=n.v.t.>
   a Het opdoen van vaardigheden voor de beroepspraktijk
   b De praktijkgerichtheid van je opleiding
   c Het contact met de beroepspraktijk (bijv. stages, gastsprekers, opdrachten voor externen)

5b. Aansluiting op de beroepspraktijk [duaal, deeltijd, afstandsopleiding]
V20. De volgende vragen gaan over de aansluiting op je beroepsloopbaan. Geef aan hoe tevreden je bent over: <1 t/m 5; 1=zeer ontevreden; 5=zeer tevreden; 6=n.v.t.>
   a Het opdoen van vaardigheden in de beroepspraktijk
   b De praktijkgerichtheid van je opleiding
   c Het contact met de beroepspraktijk (bijv. stages, gastsprekers, opdrachten voor externen)

6. De docenten aan de opleiding [allen]
V21. De volgende vragen gaan over de docenten aan je opleiding. Geef aan hoe tevreden je bent over: <1 t/m 5; 1=zeer ontevreden; 5=zeer tevreden; 6=n.v.t.>
   a De inhoudelijke deskundigheid van docenten
   b De didactische kwaliteit van docenten
   c De bereikbaarheid van docenten buiten contacturen (niet: afstandsonderwijs)
   d De betrokkenheid van de docenten bij de studenten
   e De kwaliteit van de begeleiding door docenten
   f De kwaliteit van feed-back van docenten
   g De mate waarin docenten inspirerend zijn
   h De kennis van de docenten over de beroepspraktijk
   i De beheersing van de Engelse taal van docenten (bedoeld voor studenten die hun opleiding in het Engels volgen)
7. Studiebegeleiding (alleen)
V23. De volgende vragen gaan over studiebegeleiding. We bedoelen hiermee begeleiding door studieadviseurs, coaches, mentoren, tutors - anders dan de inhoudelijke begeleiding van je docent. Geef aan hoe tevreden je bent over: <1 t/m 5; 1=zeer ontevreden; 5=zeer tevreden; 6=n.v.t.>
   a. De mogelijkheid tot begeleiding
   b. De kwaliteit van de begeleiding
   c. De mate waarin jouw opleiding initiatief neemt in ondersteuning of begeleiding

8. Toetsing en beoordeling (alleen)
V23. De volgende vragen gaan over toetsing en beoordeling. Geef aan hoe tevreden je bent over: <1 t/m 5; 1=zeer ontevreden; 5=zeer tevreden; 6=n.v.t.>
   a. De duidelijkheid van criteria waarop beoordeeld wordt
   b. De aansluiting van toetsing en beoordeling bij de inhoud van de opleiding
   c. De kwaliteit van de toetsing op kennis en inzicht
   d. De kwaliteit van de toetsing op vaardigheden
   e. Het aantal toetsmomenten (tentamen, vragen, presentaties e.d.) in je opleiding is
      o. Veel te weinig
      o. Te weinig
      o. Precies goed
      o. Te vaak
      o. Veel te veel

9. Informatie vanuit de opleiding (alleen)
V24. De volgende vragen gaan over de informatie vanuit je opleiding. Geef aan hoe tevreden je bent over: <1 t/m 5; 1=zeer ontevreden; 5=zeer tevreden; 6=n.v.t.>
   a. De informatie over jouw studievoortgang
   b. De informatie over regels en procedures
   c. De informatie over de opzet van de opleiding (varianten, minors, buitenland e.d.)
   d. Het tijdig bekend maken van resultaten van toetsen en beoordelingen

10. Studieroosters (niet: afstandsonderwijs)
V25. De volgende vragen gaan over studieroosters. Geef aan hoe tevreden je bent over: <1 t/m 5; 1=zeer ontevreden; 5=zeer tevreden; 6=n.v.t.>
   a. Het tijdig bekend maken van de studieroosters
   b. Het tijdig bekend maken van wijzigingen in het studierooster
   c. De studieerbaarheid van het studierooster (bijv. spreiding en tijdstippen)
   d. Het aantal in het studieprogramma geroosterde onderwijsjaren

11. Studielast (alleen)
V26. De volgende vragen gaan over de studielast. Geef aan hoe tevreden je bent over: <1 t/m 5; 1=zeer ontevreden; 5=zeer tevreden; 6=n.v.t.>
   a. De spreiding van de studielast over het studiejaar
   b. De haalbaarheid van deadlines
   c. De mate waarin de studiepunten (EQ) overeenkomen met de daadwerkelijke studielast
   d. De mogelijkheid om zonder vertraging de gewenste studie-onderdelen te volgen
   e. De mogelijkheid om werken en leren te combineren (alleen duaal, daadslijk en afstandsonderwijs)
12. Groepsgrootte [niet: afstandsonderwijs]
V37. De volgende vragen gaan over de grootte van de groep waarin de onderwijsactiviteiten (hoorcollegen, werkgroepen) in jouw opleiding plaats vinden. Geef aan hoe tevreden je bent over <1 t/m 5; 1=zeer ontevreden; 5=zeer tevreden; 6=n.v.t.>

a) De groepsgrootte bij werkgroepen
b) De groepsgrootte bij hoorcolleges
c) De verhouding kleinschalig versus grootschalig onderwijs in mijn opleiding.

13. Stages [allen]
V28. De volgende vragen gaan over stages die je dit jaar genomen hebt. Hieronder verstaan we iedere vorm van onderwijs, een korte of een langere periode, waarin je concrete ervaring oplevert in de beoepenpraktijk.

Heb je het afgelopen jaar stage gelopen?

- Ja
- Nee (naar v.29)
- Niet van toepassing (naar v.29)

Geef aan hoe tevreden je bent over: <1 t/m 5; 1=zeer ontevreden; 5=zeer tevreden; 6=n.v.t.>

a) De kwaliteit van de stagebegeleiding vanuit de opleiding
b) De voorbereiding op de stage door de opleiding
c) De begeleiding op je stagiairplak door het bedrijf of de instelling waar je stage loopt.
d) Wat je tijdens je stage hebt geleerd

- De aansluiting van de stages bij het overige onderwijs

14. Studiefaciliteiten (allen)
V29. De volgende vragen gaan over studiefaciliteiten. Geef aan hoe tevreden je bent over: <1 t/m 5; 1=zeer ontevreden; 5=zeer tevreden; 6=n.v.t.>

a) De geschiktheid van de onderwijsruimten
b) De beschikbaarheid van werkplekken (bv. computers, studieruimten van voldoende kwaliteit) (niet: afstandsonderwijs)
c) De beschikbaarheid van werkplekken (bv. voldoende werkplekken) (niet: afstandsonderwijs)
d) De bibliotheek/mediatheek (niet: afstandsonderwijs)
e) De ICT-faciliteiten
f) De digitale leromgeving
g) De digitale bibliotheek/mediatheek (alleen aan afstandsonderwijs)

15. Kwaliteitszorg [allen]
V30. De volgende vragen gaan over de kwaliteitszorg van je opleiding. Geef aan hoe tevreden je bent over: <1 t/m 5; 1=zeer ontevreden; 5=zeer tevreden; 6=n.v.t.>

a) Onderwijsresultaten die onder studenten plaatsvinden
b) Informatie over de uitkomsten van onderwijsbeoordeling
c) De wijze waarop je opleiding gebeurt maakt van de uitkomsten van onderwijsbeoordeling
d) De manier waarop je opleiding op knelpunten en problemen reageert

16. Uitdagend onderwijs [allen]
V31. De volgende vragen gaan over de mate waarin jouw opleiding jou uitdagen. Geef aan hoe tevreden je bent over: <1 t/m 5; 1=zeer ontevreden; 5=zeer tevreden; 6=n.v.t.>

a) De mate waarin jouw opleiding je uitdagen hoe je zelf je opleiding
b) De mate waarin je opleiding de ruimte geeft om in de studie je eigen interesse te volgen
c) De mate waarin de opleiding je stimuleert om verdieping aan te brengen in de lesstof

- De mate waarin studenten elkaar inspireren om goed te presteren
17. Internationalisering [allen]
V32. De volgende vragen gaan over de mate waarin jouw opleiding jou stimuleert en de mogelijkheid biedt om je internationaal te oriënteren. Geef aan hoe tevreden je bent over de volgende aspecten hiervan. 1 t/m 5. 1 = zeer ontevreden; 5 = zeer tevreden; 6 = n.v.t.

a. De mate waarin je wordt stimuleerd in het buitenland te gaan studeren
b. De mate waarin je gestimuleerd wordt kennis te maken met andere culturen
c. De mate waarin in het studieprogramma aandacht wordt besteed aan internationale aspecten
d. De mogelijkheden die je opleiding biedt voor studeren of stage in het buitenland

18. Contacttijd [niet: afstandsonderwijs]
V33. De volgende vragen gaan over contacttijd. Dat is het aantal klokuren per week waarin je geprogrammeerd contact hebt met een onderwijsgevende (docent, tutor, e.d.). Niet tot contacttijd moet je activiteiten rekenen als stages, werkplekken, scripties en afstudereonderzoek. Geef aan welke antwoordcategorie voor jou van toepassing is ten aanzien van contacttijd binnen je opleiding.

a. In deze onderwijsperiode wordt mij de volgende heuvelheid contacttijd aangeboden:
   ○ minder dan 6 klokuren per week
   ○ 6 tot 12 klokuren per week
   ○ 12 tot 18 klokuren per week
   ○ 18 tot 24 klokuren per week
   ○ 24 tot 30 klokuren per week
   ○ 30 of meer klokuren per week
   ○ nvt

b. Ik vind deze heuvelheid contacttijd:
   ○ veel te weinig
   ○ te weinig
   ○ Precies goed
   ○ te veel
   ○ veel te veel

19. Studeren met een functiebeperking, aandoening of ziekte [allen]
V34. Een groep studenten heet moest met de opleiding omdat zij last hebben van een ziekte, aandoening of handicap. Dat kan van alles zijn: van rolstoelgebondenheid of een ernstige ziekte tot dyslexie of RSI. We hebben aan groot aantal handicaps of beperkingen waarmee studenten kunnen kampen, op een rij gezet. Deze vragen worden gesteld om meer acht te krijgen op studenten met een beperking zodat de overheid en de instellingen samen de studieomstandigheden van studenten met een functiebeperking kunnen verbeteren. We vragen je om de vragen goed te lezen en aan te geven of je last hebt van één van deze functiebeperkingen, aandoeningen of ziektes.

Heb je een functiebeperking, aandoening of ziekte, zoals bijvoorbeeld een lichamelijke beperking, een (chronische) ziekte, dyslexie, AD(H)D of een psychische klacht?
   ○ Ja
   ○ Nee [routing: door naar volgende vragenblok]

V34a. In het kader van de Wet bescherming persoonsgegevens is het voor dit onderwerp noodzakelijk je uitdrukkelijk toestemming te vragen om de antwoorden voor studiekeuze-informatie en onderzoek te mogen gebruiken en met je onderwijsinstelling te mogen delen. Hierbij geldt uiteraard nog steeds dat strikt vertrouwelijk zal worden omgegaan met de informatie.

Ga je akkoord met het verwerken van de antwoorden over je functiebeperking, aandoening of ziekte zoals hierboven aangegeven?
   ○ Ja
   ○ Nee (door naar het volgende vragenblok in de NSE)
V35. Heb je een of meerdere van onderstaande funtiebeperkingen, aandoeningen of ziektes? Je kunt meerdere antwoorden aankruisen:
- Nee, geen funtiebeperking, aandoening of ziekte
- AD(H)D
- Artritis, reuma of andere gewrichtsklachten
- Autisme of verwante stoornis (bijv. Asperger, PDD-NOS)
- Audiëtieve beperking (doof, slechthorend)
- Chronisch vermoeidheidssyndroom (ME)
- Chronische pijnklachten
- Concentratieproblemen
- Dyscalculie
- Dyslexie
- Een vorm van kanker
- Eetstoornis (bulimie, anorexie)
- Epilepsie
- Ernstige darmstoring (bijv. ziekte van Crohn, colitis)
- Hart- en vaatziekte (bijv. hart- en vaatziekte, hoge bloeddruk, vernauwde vaatjes)
- Huidziekte (bijv. eczeem, psoriasis)
- Long- en ademhalingsprobleem (bijv. astma, astma, chronische bronchitis, CF - COPD)
- Migraine / ernstige hoofdpijn
- Motorische beperking (loopen, bewegen, gebruik van armen)
- Neurologische aandoening (bijv. MS)
- Obesitas (BI: boven de 30)
- Psychisch probleem / aandoening (bijv. depressie, psychose, burn-out, angststoornis, dwangneurose)
- Rolstoelgebruik
- RSI (pijn / tintelingen in armen, nek en rug door veelvuldig computergebruik)
- Sierdystrofie, spasme of andere spierziekte
- Aandachtstoornis aan bewegingsapparaat (bijv. hernia, verlammingenverschijnselen)
- Spraak- en/of taalproblemen (bijv. stotteren, stofjessoort)
- Suikervegerie / diabetes
- Vermoeidheid / energiekiort
- Visuele beperking (blind, slechtziend)
- Anders, namelijk ...

V36. Heb je voor deze funtiebeperking, aandoening of ziekte een medische verklaring of een officiële diagnose? [Hier de aangekruiste handicaps opnieuw tonen]
- Ja
- Nee
- Ik ben bezig met een verklaring/diagnose
- Weet ik niet

V37. In welke mate balamast deze funtiebeperking, aandoening of ziekte je bij de studie? [Hier de aangekruiste handicaps opnieuw tonen]
- Helemaal niet
- Nauwelijks
- Een beetje
- Veel
- Heel veel

V38. Zijn er voorzieningen bij de instelling waar je studeert om het studeren met deze funtiebeperking, aandoening of ziekte te vergemakkelijken?
- Ja [routing: door naar vraag 8]
- Nee [routing: door naar vraag 40]
V38.b Indien ja, hoe vaak maak je hier gebruik van? (Hier de aangekruiste handcaps opnieuw tonen):
- Alti
d - Soms
- Nooit

V39. In hoeverre ben je tevreden over de voorzieningen die jouw instelling aanbiedt om het studeren met deze functiebeperking, aandoening of ziekte te vergemakkelijken? (Hier de aangekruiste functiebeperking, aandoening of ziekte opnieuw tonen)
- Zeer ontevreden
- Ontevreden
- Neutraal
- Tevreden
- Zeer tevreden

V40. Geef aan hoe tevreden je bent over de volgende aspecten ten aanzien van studeren met een functiebeperking, aandoening of ziekte van 1 t/m 5: 1=zeer ontevreden; 5=zeer tevreden; 6=n.v.t.:
- De voorlichting en informatiediensten over studeren met een functiebeperking, aandoening of ziekte
- De opvang die je opleiding aan studenten met jouw functiebeperking, aandoening of ziekte biedt
- De toegankelijkheid van je opleiding of instelling
- De gedragingen van de gevoelens van je opleiding of instelling voor mensen met jouw functiebeperking, aandoening of ziekte
- De aanpassingen in het onderwijs dat je opleiding biedt
- De aanpassingen in de toetsing die je opleiding biedt
- De mate waarin de docenten en overige medewerkers begrip voor jou hebben
- De mate waarin de docenten en overige medewerkers voldoende kennis van zaken hebben, zodat zij op een geschikte wijze met jouw functiebeperking, aandoening of ziekte omgaan
- De mate waarin medestudenten begrip voor jou hebben
- De speciale begeleiding die je tijdens je studie krijgt

20. Internationale studenten (alleen studenten met een buitenlandse vooropleiding: antwoordopties 12, 13 en 15 uit vraag 19)

V41. De volgende vragen zijn specifiek voor internationale studenten. Geef aan hoe tevreden je bent over:
- De gedragen hulp door jouw instelling (bijv. bij inschrijving, huisvesting, v.d. e.d.)
- De hulp door je instelling bij de integratie in de Nederlandse cultuur (bijv. een Engelse of Nederlandse taalkursus, buddy-systeem)
- De persoonlijke begeleiding door je mentor/begeleider
- Het aanbod aan Engelszulige vakken
- De beheersing van de Engelse taal van medewerkers van de instelling

21. The ultimate question (allem)
V42. Zou je jouw opleiding aanraden aan vrienden, familie of collega’s?
1 Nee, zeker niet
2 Nee, ik denk het niet
3 Misschien
4 Ja, ik denk het wel
5 Ja, zeker wel
22. Wensen / ideeën voor verbetering (alleen)

V41. Heb je nog wensen of ideeën voor de verbetering van je opleiding of heb je verder nog
opmerkingen? De door jou geplaatste opmerkingen worden doorgegeven aan jouw instelling. Zij
gebruiken deze informatie voor het verbeteren van het onderwijs.
1 Nee
2 Ja, namelijk <Vrij tekstveld>