HAAGA-HELIA
University of Applied Sciences

Engagement and Motivation: Questioning students on study-motivation, engagement and study strategies

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Bachelor Thesis
Degree Programme in Sport and Leisure Management
2014

HAAGA-HELIA
University of Applied Sciences

Abstract

Date of presentation

Degree programme

Author or authors Frauke Kubischta	**Group or year of entry** DP 10
Title of report Engagement and Motivation: Questioning students on study-motivation, engagement and study strategies	**Number of report pages and attachment pages** 58 + 9
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Abstract

The aim of the present study was to investigate the motivation and engagement of the Degree Programme (DP) students from the HAAGA-HELIA University of Applied Sciences, Vierumäki Campus, English immersion, to learning in the current competence-based study environment. It also examined the study strategies which the students are employing to learning as well as the cognitive engagement and personal skills. For this purpose a questionnaire was developed using validated and reliable questionnaires such as the Revised Study Process Questionnaire (R-SPQ-2F), the Student Engagement (SE) questionnaire and the Motivated Strategies to Learning Questionnaire (MSLQ).
Due to the changes in the study structure from course-based to competence-based and student-centred in the academic year 2012/2013, it was deemed important to investigate the students' perceptions of the change and their coping strategies in this rather unfamiliar learning environment. The questionnaire was developed using the free-online software by webropol and the link was sent electronically to each student of the DP (N=40). The return rate of the questionnaire was 80%. The results of the R-SPQ-2F part show that students can be divided into three groups, one with a deep, one with an intermediate and one with a surface approach to learning. Results of the SE indicate that students are employing a variety of mental activities in their studies as well as improving their personal skills. The results from the MSLQ point out that the level of intrinsic motivation the students possess is high but that self-confidence, the use of cognitive strategies and of self-regulation could be improved.
All in all the results clearly indicate that the change of the study structure of the DP was a step into the right direction but that the process-based and student-centred approach still is in need of improvement to develop the students engagement and motivation.

Keywords Questionnaire; R-SPQ-2F; SE; MLSQ; engagement; motivation; study strategies; Degree Programme

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1 Introduction

1.1 Degree Programme Curriculum Change

Students' motivation to learn, to engage actively in learning and to persist in difficult situations while learning independently and/or being in class are topics that have kept researchers in the academics and educators on all school levels, nationally and internationally, occupied for the past decades (Fullan & Langworthy, 2013, 1; Hattie 2012, 21 & 23; Hattie 2009, 6). These topics have led to the need to develop education systems which are concerned with establishing teaching and learning environments that will foster motivation to learn in students, to develop environments which encourage students to adopt strategies for deeper learning, and to engage students actively in developing knowledge and skills (Ahlfeldt, Mehta and Sellnow 2005, 5; Beairsto 2010, 1; Fullan & Langworthy 2013, 14; Fullan & Langworthy 2014, i; Shneiderman 1998, 26).
With the aim in mind to increase student engagement to learning, to enhance motivation for knowledge and skill acquisition and to develop strategies for life-long learning the curriculum of the Degree Programme (DP) in Sport and Leisure Management at the HAAGA-HELIA University of Applied Sciences (HH UAS), Vierumäki campus, underwent a radical change.
Until the academic year 2011/2012 the curriculum of the DP was structured in courses and classes. Students were required to sit in lectures and listen to the prepared material from the teacher, prepare small assignments, and were tested in quizzes and had to pass exams at the end of the course or the year. The structure of the curriculum was similar to the curricula found in other educational institutions.
With the changes to the curriculum of the DP to a competence-based and process-based learning structure with a student-centred approach, students are put in charge of their own development. With the support of the tutors and facilitators the students are planning the processes and content of their own curriculum depending on the need to develop their skills and competences based on their progress and regular competence assessments. The key-aspects of the new DP curriculum are competence-based, student-centred and working-life oriented. Through which the students are in charge of their own learning, acquisition of necessary 21st-century skills and knowledge which will prepare them for the work-life following the studies.

Competence-based means that the professional capabilities of the students are developed throughout the studies, as well as assessing the competences of each student at the beginning of the studies, to provide the student with feedback and knowledge on the current level of personal skills and a plan to develop the needed and not yet fully developed abilities, which are the clear learning intentions as demanded by Hattie (2009, 49). Also the personal development of each student is closely monitored and the 'transparent success criteria' (Hattie 2009, 49) are laid down in rubrics and in the personal development plan of each student which can be checked upon continuously by the student to monitor his/her own progress. This in turn makes 'learning visible' (Hattie 2009, 49) because the student can personally observe his/her own development by means of checking the development plans and rubrics as well as through the realization and finalizing of processes and projects in the curriculum.

The study process is student-centred which denotes that students are in the central role as active learners, they are inquiring the study related topics actively and independently and are led towards developing an understanding for and a motivation to life-long deeper learning.

Because the studies are partly based on cooperation with real companies they are working-life oriented to equip the students with the knowledge that they will need upon conclusion of the studies to be successful on the job market, and to possess skills that employers are looking for in a future employee. Through these processes the students are in the centre of the learning environment and actively in charge of their own development, which in turn increases the motivation to learn and to develop because of the increased independency.

1.2 Theoretical background

Hattie (2009, 2) points at curriculum structures at educational institutions where the lessons are structured and delivered by teachers, the material is readily prepared for the students, exams and quizzes at the end of the course or the year are common and require the students to repeat what they have learned in the course or classes. He suggests that the students are not engaged in creating knowledge, in applying transfer thinking or in critically evaluating the content of the course and the content of what they learn in these environments. He further implies that they ware not actively en-

gaged in learning and calls them passive learners instead of active subjects (Hattie 2009, 37). The same observations on passively engaged students with little motivation to learn and acquire knowledge were made by numerous other researchers and education specialists around the world (Barron & Darling-Hammond 2008; Beairsto 2010; Blumenfeld, Soloway, Marx, Krajcik, Guzdial and Palincsar, 1991; Deci, Vallerand, Pelletier and Ryan, 1991; Frank, Lavy and Elata, 2003; Lonka & Ketonen 2012; Kearsly & Shneiderman 1999; Schwalm & Smuck Tylek 2012; Shneiderman 1998). One of the main reasons for the needed change in the education curriculum of today is that the requirements on the employees have changed considerably throughout the past 150 years (Barron & Darling Hammond, 2008, 1). In the past most employees had to follow pre-determined procedures which only required little application of transfer thinking or problem-solving, but the world has changed distinctly within the past decades. In our modern computerized society the skills demanded from employees are called 21st-century skills, they encompass effective communication, collaboration, co-operation, research, critical-thinking and analysing skills, as well as skills to effectively develop oneself, to increase learning, knowledge creation, innovation, engagement, problem-solving, information retrieval, organization and to embrace life-long learning (Barron & Darling-Hammond, 2008, 1; Kearsly & Shneiderman, 1999, 1; Schwalm & Smuck Tylek, 2012, 3).

In their publication *A Rich Seam* Fullan and Langworthy (2014, 15) call the delivery of content knowledge by the teacher to the student, the requirement of the student to master the content and the following mastering of the content by the student old pedagogies. New pedagogies are in contrast described as partnerships between the teachers and students, where content is mastered and discovered together and new knowledge is created, which leads to deep learning. 'Deep learning' is a term used by several authors such as Beekes (2006, 27), Fullan and Langworhty (2014, i), Fullan and Langworthy (2013, 3), and Pauline (2013, 2) that can be used synonymous with the term 'deep engagement' by Beairsto (2010, 3), which means that students develop an interest and a motivation from within them-selves (intrinsic) to learn and to understand. Kember, Ho and Hong (2013, 55) found out in their study that good teacher – student and student – student relationships are nurturing teaching and learning environments where motivation to learn from side of the students are increasing. This supports the notion of

new pedagogies where teachers and students engage in learning partnerships (Fullan & Langworthy, 2014, 15).

Kember et al. (2013, 44) point out in their study that teaching and learning environments have an influence on the degree of motivation in learning by students. Hattie (2009, 46) connects motivation to the notion of getting students interested in learning, from which follows that if students are motivated then they get interested in learning. Hattie (2009, 49) further elaborates that to engage students the right environment has to be created where three main points are considered, 'clear learning intentions', 'transparent success criteria' and 'making learning visible'.

The current curriculum is based on ideas developed from the four steps of the engagement model by Beairsto (2010, 2), where students are led from an adaptive behaviour to the stage of interested learner, to becoming a committed learner and developing into a passionate learner, as is depicted in Figure 1. This will eventually lead to the situation that a more independent student will be able to decide the kind of processes he or she will be engaged in to develop his or her own skills and competences, and the less independent a student is and the more support he or she needs, typically at the beginning of the studies, the more support and guidance they will receive through the tutors and through the application of for example project-based learning methods.

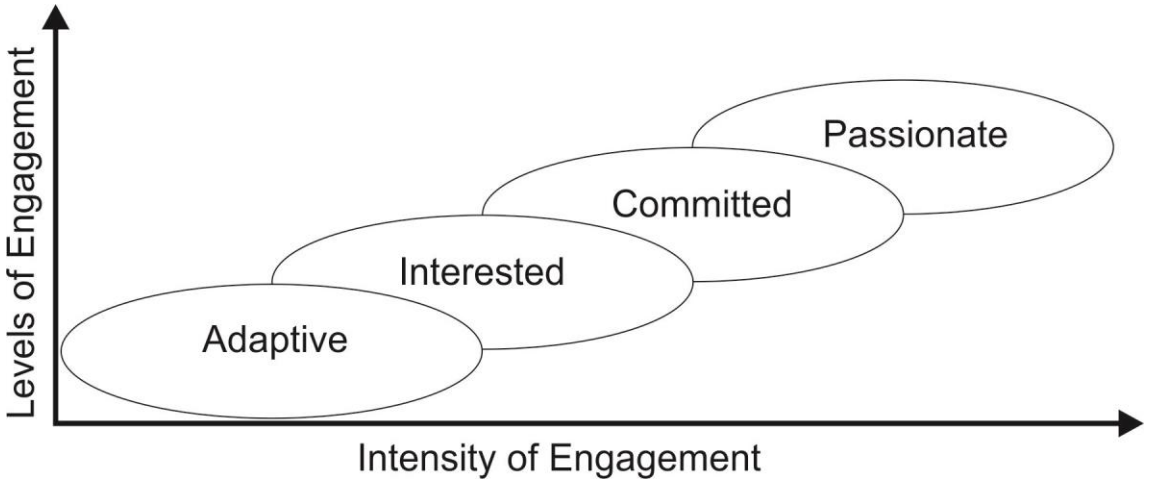

Figure 1. Modified Types of Engagement after Beairsto (2010, 2)

Figure 1 is based upon Beairsto's model of types of engagement, on the X-axis the intensity of the engagement is increasing towards the right, on the Y-axis the levels of engagement are increasing when moving upward in the scale. Beairsto called his four

stages compliant, attentive, connected and impassionate and his X-axis intensity of commitment and the Y-axis levels of commitment. However, for the present purpose the axis titles were changed as well as the four stages through which learners' progress. The aim of the DP studies is to develop each student as much as possible from an adaptive learner towards a committed learner and even into a passionate learner where the student will be completely in charge of his or her own development, the ownership of the student over own learning-processes is self-sufficient and the student is independent. However, for this to be accomplished students have to develop an understanding of what they personally want for their lives, in terms of will, skills and knowledge. They have to know why they want to study, what was the driving force for them to apply to the DP and they have to know what they need. This notion is also supported by the statements of MacNamara and Collins (2011, 1273) who argue that instead of being satisfied what each student already knows or does, the ability for learning and development of each student should be in the main focus of the study programme. Zimmerman (1990, 4) calls the learners who are in charge of their learning *self-regulated learners*, their counterparts are passive learners. Self-regulated learners are able to determine what they need to know, and how to attain the knowledge, they are also able to cope with not ideal study conditions and still be successful. These self-regulated learners are independent, and they are in charge of their own learning, they are active-learners (Hattie 2009, 37) and in terms of Beairsto (2010, 2) they are committed or even passionate learners.

The aim of every educational institution should be to lead their students from adaptive engagement towards passionate engagement to life-long learning and knowledge acquisition. Biggs and Collis (1982) developed the Structure of Observed Learning Outcomes (SOLO taxonomy), where a learner's/student's understanding of a particular subject or topic can be assessed on five levels. The learner's/student's understanding of a certain topic or subject will advance through the five stages from pre-structural to extended abstract, although not each learner or student will achieve the extended abstract level of understanding. The verbs associated with the different stages in the SOLO can be used to develop learning outcomes in the curriculum (John Biggs, SOLO taxonomy). In the design of the curriculum and the learning outcomes for the students it is possible to combine the SOLO taxonomy with the engagement model of Beairsto

(2010, 2) to create a curriculum which develops the students into passionate learners who are able to think abstractly and create new knowledge.

The methods that are currently in use in the curriculum of the DP are Process-based learning and Inquiry-based learning, in the form of Project-based learning (PBL), which are methods that support and nurture the development of each student's competences. Project-based learning (PBL) is utilized at school (Blumenfeld at al. 1991; Larmer & Mergendoller, 2012; Preuss, 2002; Solomon, 2003), at out-of-school time programs (Schwalm & Smuck Tylek, 2012) and at university level (Frank & Barzilai, 2004; Frank, Lavy and Elata, 2003; Gülbahar & Tinmaz, 2006; Shneiderman, 1998) as well as in companies (Ayas & Zenuik, 2001; Keegan & Turner, 2001; Scarbrough, Bresnen, Edelman, Laurent, Newell and Swan 2004).

As Barron and Darling Hammond (2008, 1) state, Project-based learning (PBL)[1] belongs to the category of Inquiry-based learning (IBL), as does Problem-based learning [PrBL; often also called PBL in the literature (cf. Ahlfeldt et al. 2005), but to make a clear difference between project-based learning (PBL) and problem-based learning the acronym PrBL was applied], both approaches to learning PBL as well as PrBL can be defined as belonging to the constructivistic principles of teaching (Frank et al. 2003, 273). One of the first psychologists to promote the idea of constructivism in psychology and teaching was Leo Vygotsky. Other names associated with the constructivism learning theory are John Dewey, Jean Piaget and Jerome Brunner (Isbell 2011, 21).

1.3 Questionnaire and survey literature review

A number of researchers have developed questionnaires and conducted interviews with students and athletes to determine the reason behind continuing athletic participation, motivation both to study and train, engagement in studies and training, psychological characteristics that explain talent development, persisting in the face of adversity, self-regulation, and many more. As is pointed out in Biggs, Kember and Leung (2001) research into the topics of student engagement, study strategies, learning processes and

[1] A full list of acronyms can be found in Attachment 2

investigating the motives and values that students possess has been conducted already in the 1970's and sparsely even earlier. The topic has always been of interest to psychologists, teachers, educators and administrators, and the ongoing development of questionnaires or the improvement of already existing questionnaires shows that this still is a topic of interest. Much of the research conducted in the 1980's especially on the self-determination theory can be contributed to Ryan and Deci. They can be considered as the main drivers behind the development of many of the questionnaires which are listed below. From their homepage Self-Determination Theory – An Approach to Human Motivation and Personality most of the questionnaires mentioned in the following can be downloaded free of charge (Ryan and Deci, Selfdetermination theory). A selection of the most utilized questionnaires with their main points sketched out follows.

A set of questionnaires assessing self-regulation in an academic context (SRQ-A)[2], prosocial environment (SRQ-P), medical treatment situation (TSRQ), learning environment (SRQ-L), exercise activity (SRQ-E), religion (SRQ-R) and friendship (SRQ-F) have been developed and validated by Grolnick and Ryan (1989), Levesque, Williams, Elliot, Pickering, Bodenhamer and Finley (2007), Loevinger (1957), Ryan and Connell (1989), Ryan and Deci (2000), and Williams, Grow, Freedman, Ryan and Deci (1996) and others. The Perceived Competence Scale (PCS) was developed to assess the competence an individual feels having over a certain topic, e.g. participating in a specific class or course at university, handling a medical condition, participating in a sport course, and many more. Details on the validation and application of the scale can be found in Williams, Freedman and Deci (1998) and in Williams and Deci (1996). The Intrinsic Motivation Inventory (IMI) was developed to assess interest or enjoyment in performing a task, the perceived competence while performing the task, the effort to performing said task, the value or usefulness in performing the task, the felt pressure or tension when performing the task and the perceived choice in performing the task of an individual. It has been validated and used in several studies and experiments and the following publication contain information on the validity of it and the developing process (Deci, Eghrari, Patrick and Leone 1994; McAuley, Duncan and Tammen 1987;

[2] See Attachment 2 for a full list of acronyms

Plant & Ryan 1985; Ryan 1982; Ryan, Mims and Koestner 1983; Ryan, Connell and Plant 1990; Ryan, Koestner and Deci 1991; Tsigilis & Theodosiou 2003). Vallerand, Blais, Brière and Pelletier (1989) created the l'Échelle de Motivation en Éducation (EME; Measure of Motivation towards Education), which is comprised of seven subscales measuring three different kinds of intrinsic motivation, three different kinds of extrinsic motivation and amotivation. It can be assumed that this French version of a scale to measure motivation in education has been used as a reference in developing English scales for measuring motivation in education. The EME was then further developed by Vallerand and O´Connor (1991) into the l'Échelle de Motivation pour les Personnes Âgées (EMPA; Measure of Motivation for Persons of old Age). This scale has been developed specifically to investigate and measure, with a high degree of validity, issues such as aspects of health, religion, information, leisure, interpersonal relations, and biological needs which are important to the elderly. These issues have been investigated in relation to the following four subscales of intrinsic motivation, self-determined extrinsic motivation, non-self-determined extrinsic motivation, and amotivation. To cite one qualitative study, Zimmerman and Martinez Pons (1986) was selected. They interviewed 80 students with the aim to determine what kind of self-regulated learning strategies (academic motivation and achievement) the students used depending on the study environment (class, homework or study) and if the use of learning strategies reflected the students' level of academic achievement.
MacNamara and Collins (2011) developed the Psychological Characteristics of Developing Excellence Questionnaire (PCDEQ), the scale consists of six factors with together 59 items. The scale was specifically developed to be used with 'developing' athletes, to investigate their use of certain strategies to develop excellence in their sport, and to shed light on how they cope with stress and difficulties arising through having to split their time between training, competition and studies. Several other measures exist, mainly applied in the U.S. and in Canada, which rather test a student's readiness for college like the SAT (name derives from Scholastic Aptitude Test, however, only the acronym is in use nowadays) or the American College Testing (ACT), or the Graduate Record Examination (GRE) as well as statistics and ratings, about each college's and university's rate of graduating students, how much resources they have for teaching, composition of the teaching staff (e.g. number of staff with a PhD degree), rate of

students to staff, or the amount of degrees awarded (Carini, Kuh and Klein 2006, 2; Klein, Kuh, Chun, Hamilton and Shavelson 2005, 252). Many colleges and universities in North America require the scores of one of the national tests from students in their application papers. High School graduates usually take either the ACT or the SAT, when applying to college or university.

Ahlfeldt at al. (2005) developed the Student Engagement (SE) Survey with the purpose to measure the engagement of students in university classes. The SE was developed on the basis of the National Survey of Student Engagement (NSSE). Three item blocks were extracted from the original NSSE, emphasizing the concepts of cooperative learning, cognitive-level and personal skills development, encompassing four, five and five items respectively. The three concepts are answerable on a four-point Likert scale, with 4 – very often, 3 – often, 2 – occasionally, and 1 - never. The aim was to develop an instrument that would be fast and easy to administer in class and which would measure student engagement. The SE was conducted with 56 classes in various disciplines that use problem-based learning as the main method at a university in the mid-west of the USA, this data served as the basis for the reliability measurement of the SE which was tested using the SPSS statistical analysis program. Colleges and universities in the U.S. and Canada and their students can voluntarily participate in the NSSE, this survey provides information to potential future students on how current enrolled students spent their time, which courses they are taking and what kind of activities and programs the institutions offer to their students for learning and developing. The NSSE is conducted on a yearly basis and was for the first time organized in the year 2000 (NSSE, 2014). Instead of relying on the common reputation measures of universities and colleges, such as the amount of staff holding a PhD, the size of the library, staff to student ratio or the size of the university funds, the results of the NSSE provide an insight into the learning and development practices on offer on the part of the universities and colleges to the students and the student engagement during the studies. The NSSE consists of 37 items with various amounts of example answers which can mostly be answered on a 4-point Likert scale.

The Revised Study Process Questionnaire (R-SPQ-2F) by Biggs, Kember and Leung (2001) was designed to investigate students' attitudes towards their studies and to shed light on to the approaches to studying. The R-SPQ-2F was developed by Biggs et al.

(2001) from the existing Study Process Questionnaire (SPQ), which in turn had been developed by Biggs in the late 1970's. But in lieu of the changes in the educational environment Biggs felt it necessary to update the existing SPQ into a version that would take those changes better into account. The original SPQ from 1978 consisted of 80 items (Biggs, 1978), which was then shortened to consist of 42 questions in the 80's (Biggs, 1987) investigating surface, deep and achieving learning processes by students (see Fox, McManus and Winder 2001 for details). The revised SPQ now called R-SPQ-2F and only comprising 20 items was administered to 495 undergraduate students from a university in Hong Kong. The students were studying various disciplines, were from each year of the undergraduate studies (first year to last year) and no information on the composition of the gender was given or on the age composition of the students. This revised version of the original questionnaire consists of a total of 20 questions which assess deep and surface approaches to studying by students, their so called learning preferences by Hamm and Robertson (2010), with 10 questions each, hence it is an easy tool to administer by a teacher or a lecturer during a class session. The items in the questionnaire are answered on a scale ranging from A – this item is never true or rarely true for me to E – this item is always or almost always true for me. A deep learning approach by a student is for example characterized by an interest for the topic from the student, a willingness to understand the topic and a feeling of joy when studying. On the other hand a surface approach to learning is for example characterized by memorizing facts, rote learning, by doing the bare minimum to pass tests or the course, by not being interested in the subject and by a feeling of disinterest for the course. These two main approaches to learning, surface and deep, can be further divided into subscales of deep motive, deep strategy, surface motive and surface strategy. In this further subdivision of the two main constructs lies the basis for critique on the R-SPQ-2F by other researchers and educators, such as Justicia, Pichardo, Cano, Berbén and De la Fuente (2008) and Stes, De Maeyer and Petegem (2013). Stes et al. (2013) translated the R-SPQ-2F into Dutch and conducted a survey at the University of Antwerp with 2023 students (1974 fully returned questionnaires). In their study they performed statistical analyses of their data and compared it to the results of Biggs et al. (2001), which showed that the data collected by Stes et al. (2013) did not show a good fit when compared to the original two-factor model as proposed by Biggs et al. (2001). They ran

additional confirmatory factor analysis which resulted in five underlying factors explaining 59.87% of the variance, which they named 'Studying is Interesting', 'Learning by Heart', Spending Extra Time On Studying', 'Studying With As Less Effort As Possible', and Self-regulated Learning' (Stes et al. 2013, 3). They suggest that the R-SPQ-2F is sensitive to the culture where it is applied and when it is translated into another language the meanings of the questions might change slightly, and that the study environments in each country are different which might also affect the way students are answering the questions. They concluded that the Dutch version of the R-SPQ-2F is valid and reliable but that the questionnaire has a particular limitation to it because it only assesses a particular course or subject, and that students might answer the questionnaire in a different subject completely different which makes generalizing statements of students learning approaches impossible, but it yields good results on students study approaches in a particular situation. They also propose to extend the database of the survey by means of qualitative data, e.g. through interviews, to deepen the approach and understanding of the research aim. Justicia et al. (2008) conducted the R-SPQ-2F with 314 Spanish first-year students (Faculties of Psychology and Education) and with together 522 final-year students (248 students of Education and 274 students of Psychology) to conduct exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), respectively, to examine the reliability and validity of the 20 item R-SPQ-2F as developed by Biggs et al. (2001). They observed that their data did not reproduce the same results when analysed with the same statistical methods as in the original publication. Although their findings indicate short-comings in the R-SPQ-2F and they state several problems and ambiguities with the statistical methods used to arrive at the two-factor model with four sub-scales by Biggs et al. (2001), they conclude that the R-SPQ-2F can be used by researchers, teachers and educators alike to investigate the approaches to learning by their students and to get an insight into the effects of teaching strategies on the learning habits of the students. However, they suggest that the R-SPQ-2F should only be used to determine deep and surface approaches to learning and not to use the subscales (deep motive, deep strategy, surface motive and surface strategy). Pintrich and De Groot (1990) modelled the Motivated Strategies for Learning Questionnaire (MSLQ) to investigate students' perceptions on learning and the strategies they employ. The items in the questionnaire belong to six sub-scales, self-

efficacy (9 items), intrinsic value (9 items), test anxiety (4 items), cognitive strategy use (13 items, 1 item reversed) and self-regulation (9 items, 3 items reversed). The original scale with 56 items was administered to 173 seventh-grade students, to investigate on the motivation, strategies for learning and perceptions of learning. Statistical analysis revealed that some items did not show correlation to the construct or limited the factor structure; hence the scale was revised to include only 44 items. Following this shorter version of the MSLQ, a longer version of the MSLQ, with 81 items on the scale divided in two sections, motivation (with 7 sub-scales comprising 31 items) and learning strategies (9 sub-scales comprising 50 items), was developed out of the preceding extensive research over several years and was published by Pintrich, Smith, Garcia and McKeachie in 1991. The wording of the items in the factors of the short MSLQ (Pintrich & De Groot, 1990) are very similar to the long MSLQ (Pintrich et al., 1991), albeit some minor differences also in the amount of items per factor, as well as the selection of the items making up the sub-scales. As indicated in the Motivated Strategies for Learning Manual (Pintrich et al. 1991, 3) the sub-scales that make up the questionnaire can be used independently from each other or in conjunction, the items can be reworded to suit the learning situation and the research questions posed by the investigating researcher. In their publication of 1990 Pintrich and De Groot (1990, 38) point to several shortcomings of the scale, one is that the MSLQ is a self-report, which should be accompanied by other investigation methods to replicate the results and to support them, and another one was that the classroom environment might have an influence on the particular way of answering certain items in the MSLQ. Research results by Hilpert, Stempien, van der Hoeven Kraft and Husman (2013) indicate that the latent factor structure of the MSLQ by Pintrich et al. (1991) contains flaws, and they suggest an alternative model of the MSLQ with only three latent factors, namely expectancy, value and self-regulation, instead of the 15 as proposed by Pintrich et al. (1991). However, the scale has been validated and is reliable and an easy way to determine students motivational orientations and learning strategies, moreover the present studies intentions are not to validate the MSLQ but to use it to investigate students strategies for learning and in that capacity it is performing well.

1.4 Aim and purpose of the present study

The present study was developed to investigate the motivation and engagement of the DP students to learning and to shed light on the strategies which the students are employing in learning; as well as to find out if adjustments to the process-based study environment are needed to better cater to the needs of the students, to increase the students motivation in and for learning and the engagement to learning.

A questionnaire was developed to measure student engagement and motivation to studying and the study strategies as employed by the students (see Chapter 2 for details). The full questionnaire is presented in Attachment 1.

2 Methods and Material

2.1 Method

To get an insight into the engagement of the students to learning, the motivation to learn and be involved in a project, the interest to investigate additional material for a project, the sense of competence when working on a project, the application of learning strategies, skill acquisition and cognitive development an online-questionnaire was developed. The questionnaire was created using the online survey and analysis software by webropol (Webropol the intelligent way; webropol 2.0: online survey and analysis software). Students were asked to fill out the questionnaire during their own time and anonymously. The questionnaire link was sent via e-mail to each student independently. After a week the students were verbally reminded to fill out the questionnaire. This verbal reminder was followed by two reminder e-mails sent to each student individually. Permission to conduct the research was obtained from the director of the Vierumäki unit, Matti Kauppinen.

2.2 Participants

The questionnaire was sent to all first and second year students (DP 11 and DP 12; N=40; 6 female and 34 male) of the Degree Programme in Sports and Leisure Management (Bachelor education; English immersion) of the HH UAS, Vierumäki Campus. The students' ages range from 20 to 45 years and the prior education varies to a large degree, from having graduated from High School within the past year to already possessing a University Degree and/or having been trained for a profession and been employed for several years. In total 32 completed questionnaires were returned until the dead-line, which corresponds to a return rate of 80%.

2.3 Material

The multi-section questionnaire was constructed on the basis of an extensive literature review (see chapter 1.2 for details; see Attachment 1 for the full questionnaire). Out of the discussed questionnaires in Chapter 1.2 three scales were selected for the present study based on the evaluation of their usefulness, topic of assessment and easy ap-

plicability. They are the R-SPQ-2F[3] (Biggs et al. 2001), the SE[4] (Ahlfeldt et al. 2005) and the MLSQ[5] (Pintrich & De Groot 1990).

The questionnaire is divided into three parts totalling 70 items, part one consists of 20 items investigating study processes (R-SPQ-2F), part two consists of two sets of 5 items each (see 2. and 3. in the questionnaire, Attachment 1) assessing student engagement (SE), and part three comprises 40 items measuring motivated strategies for learning (MSLQ). Each individual item of the questionnaire is tagged with a star, which means that the student is required to answer each item before advancing in the questionnaire to the next item. Biggs et al. (2001) and Ahlfeldt et al. (2005) indicate the total amount of students that participated in their studies, but they do not reveal the gender distribution. Pintrich and De Groot (1990, 26) ran analyses on the gender effect in their study, however the multivariate analyses of variance (MANOVAS) did not show a significant gender effect on the other variables and so they took the gender variable out of the subsequent multivariate analysis of covariance (MANCOVA). On account of two of the used scales not reporting on the gender distribution in the studies and one not showing a significant influence of the gender on the scale results also the present questionnaire does not require the students to indicate their gender.

2.3.1 Revised Study Process Questionnaire (R-SPQ-2F)

Part one comprises the items of the revised two-factor Study Process Questionnaire (R-SPQ-2F) as developed by Biggs et al. (2001) unaltered. John Biggs and David Kember own the copyrights to the R-SPQ-2F. The R-SPQ-2F consists of 20 items of which 10 make up the Deep approach (DA; items 1; 2; 5; 6; 9; 10; 13; 14; 17 and 18)[6]

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[3] Revised Study Process Questionnaire
[4] Student Engagement
[5] Motivated Strategies for Learning
[6] Deep Approach items:
1. I find that at times studying gives me a feeling of deep personal satisfaction
2. I find that I have to do enough work on a topic so that I can form my own conclusions before I am satisfied
5. I feel that virtually any topic can be highly interesting once I get into it
6. I find new topics interesting and often spend extra time trying to obtain more information
9. I find that studying academic topics can at times be as exciting as a good novel or movie
10. I test myself on important topics until I understand them completely
13. I work hard at my studies because I find the material interesting
14. I spend a lot of my free time finding out more about interesting topics which have been discussed in different classes

and 10 the Surface approach (SA; items 3; 4; 7; 8; 11; 12; 15; 16; 19 and 20)[7] to learning.

Students were required to answer the items on a 5-point Likert scale with A-this item is never true for me, B-this item is sometimes true for me, C-this item is true of me about half the time, D-this item is frequently true of me, and E-this item is always true of me.

2.3.2 Student Engagement (SE)

Part two is taken from the Student Engagement (SE) Survey as developed by Ahlfeldt et al. (2005), it consists of 5 items belonging to the Cognitive level construct[8] and 5 items belonging to the Personal skills construct[9], however the Collaborative learning construct from the original publication was omitted from this questionnaire because

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17. I come to most classes with questions in mind that I want answering
18. I make a point of looking at most suggested readings that go with the lectures

[7] Surface Approach items:
3. My aim is to pass the course while doing as little work as possible
4. I only study seriously what's given out in class or in the course outline
7. I do not find my course very interesting so I keep my work to a minimum
8. I learn some things by rote, going over and over them until I know them by heart even if I don´t understand them
11. I find I can get by in most assessments by memorizing key sections rather than trying to understand them
12. I generally restrict my study to what is specifically set as I think it is unnecessary to do anything extra
15. I find it is not helpful to study topics in depth. It confuses and wastes time, when all you need is a passing acquaintance with topics
16. I believe that lecturers shouldn´t expect students to spend significant amounts of time studying material everyone knows won´t be examined
19. I see no point in learning material which is not likely to be in the examination
20. I find the best way to pass examinations is to try to remember answers to likely questions

[8] Cognitive level construct:
1. memorizing facts, ideas or methods from your course and readings so you can repeat them in almost the same form
2. Analyzing the basic elements of an idea, experience or theory such as examining a specific case or situation in depth and considering its components
3. Synthesizing and organizing ideas, information, or experiences into new, more complicated interpretations or relationships
4. Evaluating the value of information, arguments, or methods such as examining how others gathered and interpreted data and assessing the accuracy of their conclusions
5. Applying theories and/or concepts to practical problems or new situations

[9] Personal skills construct:
1. Acquiring job or career related knowledge and skills
2. Writing clearly, accurately, and effectively
3. Thinking critically and/or analytically
4. Learning effectively on your own, so you can identify, research, and complete a given task
5. Working effectively with other individuals

the aim of the survey was to evaluate the approaches that the students take towards learning, knowledge acquisition, self-development and skill acquisition as well as motivation towards their studies. So after careful deliberation the collaborative learning construct was taken out of an early version of the questionnaire, to make it shorter and also because it was deemed that this construct would not improve greatly towards the understanding of students' approaches to learning or add considerably to the value of the questionnaire itself, if used. Hence it will not be possible to calculate an engagement score (ES) for these sections that would be comparable to the engagement score by Ahlfeldt et al. (2005), but the scores of the constructs, Cognitive level and Personal skills, can be calculated and compared to the results by Ahlfeldt et al. (2005). Students were asked to answer sections two and three on a 4 – point scale ranging from 4 – very much, 3 – quite a bit, 2 – some, and 1 – very little. The score of the first item in section two has to be reversed when analysing the results.

2.3.3 Motivated Strategies for Learning (MSLQ)

Part three is based on the Motivated Strategies for Learning Questionnaire (MSLQ) as developed by Pintrich and De Groot (1990). This questionnaire in its original form consists of six factors comprising 44 items in total. The factors are self-efficacy (9 items), intrinsic value (9 items), test anxiety (4 items), cognitive strategy use (13 items) and self-regulation (9 items). For the present study the items concerning test anxiety were omitted, because the study-process of the DP does not include any form of written exams, written tests or class exercises, hence the students are not subjected to anxieties related to an examination environment. As is pointed out in the discussion by Pintrich and De Groot (1990, 35) test anxiety has no immediate influence or impact on self-regulatory or cognitive strategies used by students, this observation supports the notion that the factor test anxiety can be deleted from the questionnaire, especially in the present case where the students are not required to write or pass tests. As is also mentioned in Pintrich et al. (1991, 3), the individual scales that make up the MSLQ can be used independently from each other and researchers can pick the ones out that fit their research aim best. The numbers of the test anxiety questions in the original publication (Pintrich & De Groot, 1990, Attachment) are: 3, 12, 20, and 22. The items in the MSLQ are organized in a partly random fashion so that items belonging to the same

factor are not all appearing consecutively (item numbers reflect the numbers as they are in the present study, see Attachment 1).

Items 2., 5., 7., 8., 10., 11., 14., 16., and 17. belong to the Self-efficacy factor[10] of the MSLQ. The Intrinsic value factor[11] comprises items 1., 3., 4., 6., 9., 12., 13., 15. and 18. These two factors make up the Motivational Beliefs part of the MSLQ.

The Self-Regulated Learning Strategies part of the MSLQ is made up of the two factors Cognitive strategy use and Self-regulation.

Constructive strategy use[12] comprises the items 19., 20., 22., 24., 25., 26., 27., 30., 32., 35., 37., 38. and 40. Finally Self-regulation[13] is composed of the items 21., 23., 28., 29., 31., 33., 34., 36. and 39.

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[10] Self-efficacy factor items:
2. Compared with other students in this class I expect to do well
5. I´m certain I can understand the ideas related to the project work
7. I expect to do well in this study system
8. Compared with the others in my class, I think I´m a good student
10. I am sure I can do an excellent job on the problems and tasks assigned for this project
11. I think I will receive a good grade for this project
14. My study skills are excellent compared to others in this class
16. Compared with other students in this class I think I know a great deal about the subject
17. I know I will be able to learn the material for this project

[11] Intrinsic value factor items:
1. I prefer project work that is challenging so I can learn new things
3. It is important for me to learn what the project work teaches me
4. I like what I learn in the projects
6. I think I will be able to use what I learn in this project in other projects
9. I often choose topics where I will learn something from even if they require more work
12. Even when I do poorly during an assessment I try to learn from my mistakes
13. I think that what I am learning in this class is useful for me to know
15. I think that what we are learning in this class is interesting
18. Understanding this topic is important to me

[12] Cognitive strategy use items:
19. When I prepare for an assessment, I try to put together information from the project and from other resources
20. When I work on the project alone, I try to remember what the other project-members have told me
22. It is hard for me to decide what the main ideas are in what I read
24. When I study I put the important ideas into my own words
25. I always try to understand what the others are saying even if it doesn´t make any sense
26. When I prepare for an assessment I try to remember as many facts as I can
27. When studying, I copy my notes over to help me remember material
30. When I study for a presentation I practice saying the important facts over and over to myself
32. I use what I have learned from old project assignments and the textbooks to do new assignments
35. When I am studying a topic, I try to make everything fir together
37. When I read materials for the project, I say words over and over to myself to help me remember
38. I outline the chapters in my book to help me study
40. When reading I try to connect the things I am reading about with what I already know

Students were requested to answer the items in this third part of the questionnaire on a 7-point Likert scale going from 1 – not at all true for me to 7 – very true for me, the intermediate steps were 2 – almost never true for me, 3 –usually not true for me, 4 – occasionally true for me, 5 – sometimes true for me, and 6 – true for me. Answers to the items 22, 23, 33 and 34 have to be subtracted from 8 to calculate the real score for students answer to that item, because they are marked as reversed coded in the MSLQ, and have to be reflected before scoring the item correctly.
Further the wording of the items was adjusted to reflect the study-process of the DP as is suggested in the manual for the MSLQ (Pintrich et al. 1991, 3).

Following items received adjustment (the original item numbers from Pintrich and De Groot (1990) in brackets):
Question 1 (1): class exchanged to project
Question 3 (4): is being taught in this class exchanged to the project work teaches me
Question 4 (5): this class exchanged to the project
Question 5 (6): taught in this course exchanged to related to the project work
Question 6 (7): class exchanged to project; other classes exchanged to other projects
Question 7 (8): this class exchanged to this study system
Question 10 (11): class exchanged to project
Question 11 (13): in this class exchanged to for this project
Question 12 (14): on a test exchanged to during an assessment
Question 17 (19): class exchanged to project
Question 18 (21): subject exchanged to topic

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[13] Self-regulation items:
21. I ask myself questions to make sure I know the material I have been studying
23. When work is hard I either give up or study the easy parts
28. I wotk on practice exercises and prepare extra material even when I don´t have to
29. Even when the materials for the project are dull and uninteresting, I keep working until i finish
31. Before I begin studying I think about the things I will need to do to learn
33. I often find that I have been reading for a project-meeting but I don´t know what it is all about
34. I find that when someone else is talking I think of other things and don´t really listen to what is being said
36. When I am reading I stop once in a while and go over what I have read
39. I work hard to get a good grade even when I don´t like the project

Question 19 (23): study for a test, I try to put together the information from class and from the book exchanged to prepare for an assessment, I try to put together information from the project and from other resources

Question 20 (24): do homework exchanged to work on a project alone; the teacher said in class so I can answer the questions correctly exchanged to other project members have told me

Question 26 (30): study for a test exchanged to prepare for an assessment

Question 29 (33): study materials exchanged to the materials for the project

Question 30 (34): a test exchanged to presentation

Question 32 (36): homework exchanged to project

Question 33 (37): class exchanged to project-meeting

Question 37 (41): this class exchanged to the project

Question 39 (43): class exchanged to the project

3 Reliability and Results

3.1 Reliability

The reliability of each part of the questionnaire has been tested and validated in the respective original publication see Pintrich and De Groot (1990), Ahlfeldt et al. (2005), and Biggs et al. (2001) for details. In the following a brief recount of the results of the reliability measurements for each of the questionnaire parts is jotted down, a longer discussion on the development and use of the questionnaires as well as on their limitation and shortcomings can be found in Chapter 1.2.

3.1.1 Reliability of the R-SPQ-2F

Biggs et al. (2001, 142) reports the Cronbach alpha values for the R-SPQ-2F for the DA with 0.73 and for the SA with 0.64 for their sample. Their conclusion is that the results of the Cronbach alpha for both constructs are acceptable.

3.1.2 Reliability of the SE

Ahlfeldt et al. (2005, 11) report the alpha reliability of their scale with 0.84. The reliability of the SE was determined with SPSS statistical analysis.

3.1.3 Reliability of the MSLQ

Pintrich and De Groot (1990, 35) report Cronbach alpha for the self-efficacy variables of the MSLQ as 0.89, the intrinsic value variables Cronbach alpha as 0.87, the Cronbach alphas for the cognitive strategy was reported with 0.83 and for self-regulation with 0.74. Furthermore they report on the computation of the zero-order correlations and summary statistics as depicted in Table 1.

Table1. Summary Statistics and Zero-Order Correlations for Motivation and Self-Regulated Learning variables as reported by Pintrich and De Groot (1990, 35).

Variable	1.	2.	3.	4.	5.
1. Intrinsic value	-	6	17	11	2.4
2. Self-efficacy	.48*	-			
3. Test anxiety	-.01	-.34*	-		
4. Strategy use	.63*	.33*	.04		
5. Self-regulation	.73*	.44*	-.13	.83*	-
M	5.44	5.47	3.58	5.20	5.03
SD	0.89	1.00	1.67	0.77	0.83

Note: *N*=173
*p<.001.

3.2 Results

3.2.1 Results for the R-SPQ-2F in the present study

Instructions on how to obtain the score for the Deep approach and the Surface approach are given in Biggs et al. (2001, 149). Ten of the items in the scale make up the Deep approach (DA) to learning and ten make up the Surface approach (SA) to learning (see chapter 2.3.1 or attachment 1 for the wording of the items). DA consists of items 1; 2; 5; 6; 9; 10; 13; 14; 17 and 18 and SA consists of items 3; 4; 7; 8; 11; 12; 15; 16; 19 and 20, to receive the scores for each main scale, DA and SA, the responses are scored as follows: A-this item is never true for me = 1, B-this item is sometimes true for me = 2, C-this item is true of me about half the time = 3, D-this item is frequently true of me = 4, and E-this item is always true of me = 5, then the score for DA is = 1+2+5+6+9+10+13+14+17+18 and for SA = 3+4+7+8+11+12+15+16+19+20. In Table 2 the original scores for the answers have been converted from the letters to numbers.

The answer scores received colour coding to make the trends in the answers easier to observe, see Table 2 for the colour coded response scores (1 = orange; 2 = grey; 3 =

light blue; 4 = blue and 5 = green). The highest scores possible for DA and SA is 50 each, the lowest score possible is 10.

The total for the DA score, as well as the total for the SA score are given for each student. The distribution of the scores in Table 2 shows a pattern, for the DA the higher scores (4 (blue) and 5 (green)) have a higher occurrence in the upper part of the table, whereas the higher scores (3 (light blue) and 4 (blue)) can be found with a higher distribution in the bottom half of the SA.

Table 2. The scores of each student for each item of the scale, as well as the summed up scores for DA and SA are shown. Color-coding was applied to distinguish between answer trends in the DA and SA

	Deep Approach Item No.										TOTAL DA	Surface Approach Item No.										TOTAL SA
Student	1	2	5	6	9	10	13	14	17	18		3	4	7	8	11	12	15	16	19	20	
A	3	2	5	2	1	5	5	3	4	5	35	1	1	1	2	2	1	1	1	1	1	12
B	4	3	4	3	4	3	4	3	1	2	31	2	3	2	2	2	2	1	1	1	2	18
C	3	3	4	4	2	2	4	2	3	4	31	2	4	1	3	4	2	2	1	2	3	24
D	4	5	4	5	4	3	4	5	4	4	42	2	1	1	2	2	1	1	1	1	3	15
E	4	4	2	4	4	4	3	4	4	3	36	1	3	1	3	2	1	2	4	3	3	23
F	4	5	5	4	3	3	4	5	4	3	40	2	2	3	4	4	2	1	1	2	2	23
G	4	5	4	4	4	2	4	3	2	4	36	1	1	1	1	1	2	1	1	1	2	12
I	2	4	3	2	1	4	2	2	3	3	26	2	3	2	1	2	2	1	1	4	2	20
J	4	4	4	5	3	4	4	3	3	4	38	2	2	2	4	2	2	1	2	2	2	21
K	4	4	4	3	3	4	4	2	3	3	34	1	3	1	2	2	2	1	1	1	1	15
L	4	3	2	5	4	3	2	2	3	3	31	1	4	4	1	3	4	2	4	2	5	30
M	2	4	1	1	1	1	1	1	1	1	14	3	3	4	3	4	4	3	3	1	3	31
N	2	2	1	3	3	1	3	2	1	2	20	2	2	2	2	2	4	2	2	1	1	20
O	5	5	3	4	5	4	5	5	3	4	43	1	1	1	2	2	1	1	1	1	2	13
P	2	4	3	2	3	2	3	3	2	4	28	2	2	2	1	1	1	2	1	1	1	14
Q	4	5	4	3	4	2	4	3	3	3	35	1	1	1	2	2	1	2	2	3	4	19
R	2	4	3	4	4	3	3	5	3	3	34	2	2	2	2	3	2	2	1	1	3	20
S	2	3	2	3	3	3	3	3	3	2	27	3	4	4	2	3	2	2	4	2	3	29
T	3	4	2	3	3	3	5	3	2	4	32	2	3	2	1	2	3	1	1	1	3	19
U	3	2	3	4	2	3	2	4	4	4	31	4	4	3	2	3	3	3	3	3	3	31
V	4	3	5	3	5	3	3	2	3	2	33	2	1	3	2	4	2	1	2	2	2	21
W	3	4	5	3	3	2	3	3	3	3	32	1	3	2	3	3	3	3	2	1	2	23
X	3	3	4	4	4	1	4	3	2	3	31	4	4	2	3	1	2	1	3	2	2	24
Y	4	4	3	4	3	3	4	3	3	4	35	3	4	3	3	4	3	4	3	4	4	35
Z	3	4	4	3	2	2	3	3	3	3	30	2	2	2	1	1	2	1	2	1	1	15
Ä	2	3	4	2	1	3	3	1	2	2	23	1	2	1	2	3	3	1	2	1	3	19
Ö	3	3	2	3	2	4	3	2	3	2	27	1	3	3	2	2	2	2	2	3	1	21
Å	4	2	3	2	3	3	4	2	2	2	27	2	3	3	4	4	4	3	4	2	4	33
AA	5	5	5	3	4	4	5	4	2	4	41	1	3	1	3	4	1	1	1	1	1	17
BB	2	3	3	3	3	3	4	3	3	4	31	2	3	2	2	3	3	2	2	2	3	24
CC	4	5	3	3	2	4	4	3	3	2	33	2	3	2	2	1	3	2	2	3	3	23
DD	3	2	4	3	2	2	3	1	1	3	24	3	4	3	2	3	3	2	2	2	3	27

The mean for the DA is 31.5, with a sample standard deviation of 6.26. The mean for SA is 21.5, with a sample standard deviation of 6.15. The highest DA score is 43 and the lowest 14, the highest SA score is 35 and the lowest is 12 (Table 3).

Table 3. Responses to part one Deep approach and Surface approach of the questionnaire, measuring study process are displayed, as well as the highest and lowest score range, the mean and the standard deviation

	N	Score Range low	Score Range High	Mean	Standard Deviation
Deep approach	32	14	43	31.5	6.62
Surface approach	32	12	35	21.5	6.15

As is illustrated in Table 2 only five students (D, F, J, O and Y) scored the items in the DA with only C – this item is true for me about half the time, D – this item is frequently true for me and E – this item is always or almost always true for me. The other students chose to answer the items in the DA with more variety. Out of the 32 students 14 chose to answer the items on the DA at least once with option E – this item is always or almost always true of me. Answer options A – this item is never or rarely true of me and B – this item is sometimes true of me have been chosen by five students (A, G, O, P and Z) as the only options for answering items in the SA. Other students chose to answer employing also options C – this item is true of me about half the time, D – this item is frequently true of me and/or E – this item is always or almost always true of me. Only one single student (L) chose to answer one item in the SA with E – this item is always or almost always true of me.

The scores for each student were plotted on the XY-Graph as is depicted in Figure 2, to show that similar results would plot together. Also the means for SA and DA (black lines) as well as the sample standard deviations (grey shaded area) are plotted in the figure.

As is illustrated in Figure 2 the DA was scored equally by 16 students above and below the mean; 18 students scored the SA below the mean and 14 students scored above the mean.

As is also depicted in Figure 2 all the students plotting in square A scored above the mean for the DA and below the mean for the SA. In square B all the students plot who score below the mean in the DA and below the mean in the SA. Square C is characterized by all the students who plot above the mean for DA and SA and in square D all the students plot who´s SA is above the mean and the DA below the mean.

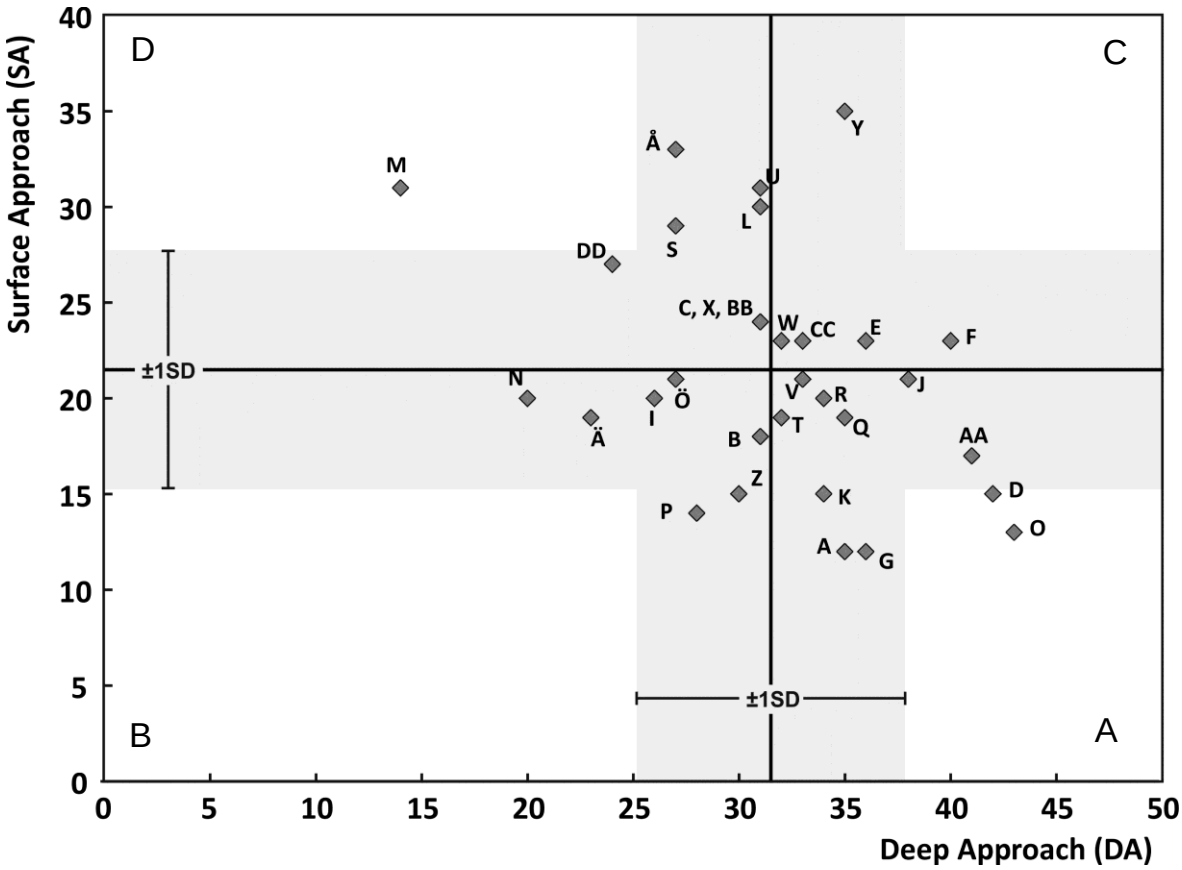

Figure 2. The figure depicts the DA and SA scores for each student on a XY – Scatter Graph, the mean for SA and DA are indicated with the black lines and the grey shaded area indicates the standard deviations for the DA and the SA

The totals in Table 4 indicate how many times a certain answer score (A – this item is never or only rarely true of me, B – this item is sometimes true of me, C – this item is true of me about half the time, D – this item is frequently true of me or E – this item is always or almost always true of me) has been selected by the students in the DA and SA part of the questionnaire, as well as the distribution of the answer scores for each item. For items belonging to the DA approach the students selected option C – this item is true of me about half the time most often (36.56%), followed by answer option

D – this item is frequently true of me (29.3%). Answer option B – this item is sometimes true of me has a share of 19%. On the other hand for items belonging to the SA approach students selected option B – this item is sometimes true of me most often (36.56%), followed by option A – this item is never or rarely true of me (29.6%) and option C – this item is true of me about half the time.

Table 4. The items for DA and SA are separated and the distribution of the students' scores for each item are shown, as well as the totals for each answer option and the percentages

DA						SA					
Items	A	B	C	D	E	Items	A	B	C	D	E
1	0	8	9	13	2	3	11	15	4	2	0
2	0	5	9	11	7	4	6	7	12	7	0
5	2	5	9	3	8	7	10	12	7	3	0
6	1	5	14	9	2	8	6	16	7	3	0
9	4	6	11	9	2	11	5	12	8	7	0
10	3	7	13	8	1	12	7	13	8	4	0
13	1	3	11	13	4	15	15	12	4	1	0
14	3	8	14	3	4	16	13	11	4	4	0
17	4	7	16	5	0	19	15	10	5	2	0
18	1	8	11	11	1	20	7	9	12	3	1
TOTAL	19	61	117	94	29	TOTAL	95	117	71	36	1
In %	5.9	19	36.56	29.3	9	In %	29.6	36.56	22.1	11.25	0.3

In Table 5 the scores for each student are strictly arranged by the difference between their DA and SA scores, with the students with highest scores for DA and the lowest

for SA at the top, and with decreasing scores and decreasing difference between the scores for DA and SA toward the bottom of the table.

Table 5. The results of the DA and SA to learning by the students are strictly arranged by the difference between DA and SA, with the highest DA at the top and the lowest DA at the bottom, the last column indicates where the student plots on the XY-Graph in Figure 2

Student	DA	SA	Diff	Square
O	43	13	30	A
D	42	15	27	A
AA	41	17	24	A
G	36	12	24	A
A	35	12	23	A
K	34	15	19	A
F	40	23	17	C
J	38	21	17	A
Q	35	19	16	A
Z	30	15	15	B
R	34	20	14	A
P	28	14	14	B
E	36	23	13	C
T	32	19	13	A
B	31	18	13	B
V	33	21	12	A
CC	33	23	10	C
W	32	23	9	C
C	31	24	7	D
X	31	24	7	D
BB	31	24	7	D
Ö	27	21	6	B
I	26	20	6	B
Ä	23	19	4	B
L	31	30	1	D
Y	35	35	0	C
U	31	31	0	D
N	20	20	0	B
S	27	29	-2	D
DD	24	27	-3	D
Å	27	33	-6	D
M	14	31	-17	D

Through the division of the data field into 4 squares (A, B, C, and D) in Figure 2 by the inserted means for DA and SA, the students can be categorized as having a deep or surface or intermediate approach to learning. The students plotting in square A show a preference for a deep approach to learning. Their score for the DA is above the mean

and the score for the SA below the mean. Further students plotting in squares B and C show a non-dominant or intermediate approach to learning. In square B all students with a DA below the mean and a SA below the mean are plotted together, and in square C all students with a DA above the mean and a SA above the mean are plotted. The last square D in Figure 2 plots those students together who scored their DA below the mean and the SA above the mean, which indicates clearly a preference for a surface approach to learning. However, as can be seen from Table 2 not a single student answered all the items in the DA scale with D and E, most also choose to answer some of the items with choice C, some with B and one student answered one item with A. The same is present in the answer range for the SA scale, even students with a low overall score in the SA, chose to answer some of the items with option C and D. Option E was only chosen once by a single student. Further when comparing the results as depicted in Figure 2 with the results in Table 5 a somewhat different picture seems to emerge, however this is due to the fact that the results in Table 5 are strictly arranged by the difference between the DA and SA scores, this method does not take the means of the DA or SA scores into account, hence for example student F's scores plot due to the large difference between DA and SA score of 17 in between the scores of students that are found to plot together in square A of Figure 2. This is also the case for the other students that plot in Table 5 in between student groups of squares A, B, or C. As emerges from Table 4 students mainly score intermediate in the DA with the results centring over answer option C, with a strong D and a little less preference for B. On the other hand the results for the SA show a shift towards answer options B and C, followed by a still somewhat prevailing preference for option C. As is evident from Table 4 items 14 and 17 in the DA received 7 and 8 times, respectively, the answer option B – this item is sometimes true of me following option C – this item is true of me about half the time, 14 and 16 times, respectively. Item 14 deals with home study of interesting topics from class and item 17 with thinking about topics and developing questions on the topics for answering in class (see attachment 1 for details). Two items of the SA (4 and 20) received the highest scores for answer option C – this item is true for me about half the time. Item 4 reflects on the fact that students only study the material serious that is given out in class and item 20 characterizes an approach to passing examinations by memorizing answers to likely questions.

3.2.2 Results for the SE in the present study

Calculations of part two Cognitive level and Personal skills resulted in the scores, as shown in Table 6 (see chapter 2.3.2 or attachment 1 for the wording of the items). For the Cognitive level and the Personal skills variables the scores of the items for each student are combined together, resulting in the lowest score of 8 and the highest score of 19 for the Cognitive level, with a mean of 14 and a standard deviation of 2.4, and with a lowest score of 7 and a highest score of 18 in the Personal skills, with a mean of 13.9, and a standard deviation of 2.8. The highest score possible for both Cognitive level and Personal skills is 20 each and the lowest is 5 each.

Table 6. Responses to part two Cognitive level and Personal skills of the questionnaire, measuring Student Engagement are displayed, as well as the highest and lowest score range, the mean and the standard deviation

	N	Score Range Low	Score Range High	Mean	Standard Deviation
Cognitive level	32	8	19	14	2.4
Personal skills	32	7	18	13.9	2.8

In Table 7 the scores for the first item in the Cognitive level construct have been reversed. Furthermore the SUM indicates how many times each answer option (4 – very much, 3 – quite a bit, 2 – some and 1 – very little) was selected by the students in the Cognitive level and Personal skills variables (Tables 8 and 9).

Table 7. The distribution and the sum for the answers of items for the two variables, Cognitive level and Personal skills, are shown

	Cognitive level					Personal skills			
Items	4 – very much	3 – quite a bit	2 – some	1 – very little	Items	4 – very much	3 – quite a bit	2 – some	1 – very little
1.	8	15	9	0	1.	10	13	9	0
2.	5	20	6	1	2.	1	12	12	7
3.	5	10	16	1	3.	6	17	7	2
4.	2	15	11	4	4.	10	10	10	2
5.	9	16	7	0	5.	9	15	7	1
SUM	29	76	49	6 (3.75)	SUM	36	67	45	12 (7.5)
(%)	(18.12)	(47.5)	(30.6)		(%)	(22.5)	(41.87)	(28.12)	

For both variables option 3 – quite a bit (red) was selected most of the time, 76 (47.5%) times for Cognitive level and 67 (41.87%) times for the Personal skills followed by option 2 – some (blue) with 49 (30.6%) and 45 (28.12%) times respectively. This is followed by option 4 – very much (green) 29 (18.12%) and 36 (22.5%) times respectively, option 1 – very little (brown) was only selected 6 (3.75%) times for the Cognitive level and 12 (7.5%) times for the Personal skills. In both tables (Tables 8 and 9) the options 3 (red) and 2 (blue) are evenly distributed, on Table 8 option 4 (green) has a higher occurrence in the upper half of the table, whereas on Table 9 option 4 is evenly distributed across. Option 1 occurs most times in the bottom half of Table 8 and most times in the upper half of Table 9.

Student F, J, and O have the highest score in the Cognitive level variable, student DD the lowest. In the Personal skills variable students F, K, X and Ä have the highest score, students D and W the lowest.
The answer options are colour coded in Tables 8 and 9: 4 – very much is green, 3 – quite a bit is red, 2 – some is blue and 1 – very little is brown.

Table 8. The distribution of the answers for the Cognitive level variable of the SE are shown, colour coding of the answers supports the distribution view. The total for each student's score is shown on the right hand side of the table

	Cognitive level[14]					
Student	**Memorizing**	**Analysing**	**Synthesizing**	**Evaluating**	**Applying**	**Total**
A	2	3	4	2	4	15
B	4	3	2	3	2	14
C	3	4	4	3	4	18
D	2	2	2	2	2	10
E	3	3	2	2	3	13
F	4	3	4	4	4	19
G	4	2	2	1	3	12
I	3	3	2	2	3	13
J	4	4	4	3	4	19
K	2	3	2	3	3	13
L	2	3	3	3	2	13
M	3	3	3	3	3	15
N	3	3	3	1	4	14
O	4	4	4	3	4	19
P	4	3	2	2	3	14
Q	3	3	3	2	3	14
R	3	3	2	3	3	14
S	3	2	2	3	3	13
T	3	4	3	2	3	15
U	2	2	3	4	4	15
V	3	4	3	2	4	16
W	3	2	2	2	2	11
X	2	3	2	3	3	13
Y	2	3	3	3	3	14
Z	4	3	2	2	3	14
Ä	2	3	2	3	3	13
Ö	4	3	3	1	3	14
Å	3	2	2	2	2	11
AA	3	3	3	3	4	16
BB	3	3	2	3	2	13
CC	2	3	2	3	3	13
DD	3	1	1	1	2	8

[14] Cognitive level items:
1. Memorizing facts, ideas or methods from your course and readings so you can repeat them in almost the same form
2. Analyzing the basic elements of an idea, experience or theory such as examining a specific case or situation in depth and considering its components
3. Synthesizing and organizing ideas, information, or experiences into new, more complicated interpretations or relationships
4. Evaluating the value of information, arguments, or methods such as examining how others gathered and interpreted data and assessing the accuracy of their conclusions
5. Applying theories and/or concepts to practical problems or new situations

Table 9. The scores for each student for the Personal skills variable of the SE are shown. On the right hand side of the table the total scores for each student are displayed. Colour coding of the answer distributions supports the visual observation of trends in the answers

	Personal skills[15]					
Student	**Acquiring**	**Writing**	**Thinking**	**Learning**	**Working**	**Total**
A	2	1	3	3	4	13
B	3	2	3	2	3	13
C	3	1	2	4	2	12
D	2	1	2	1	1	7
E	2	2	2	2	3	11
F	4	3	4	4	3	18
G	2	1	2	3	2	10
I	2	1	3	2	4	12
J	4	3	3	3	4	17
K	3	3	4	4	4	18
L	3	3	3	3	3	15
M	2	1	4	4	3	14
N	3	2	1	2	3	11
O	4	2	4	4	3	17
P	4	2	2	4	3	15
Q	3	2	3	3	3	14
R	3	2	3	4	3	15
S	3	3	3	3	3	15
T	4	2	3	4	4	17
U	3	2	3	2	2	12
V	4	2	4	3	4	17
W	2	1	1	1	2	7
X	4	3	4	3	4	18
Y	3	3	3	3	3	15
Z	4	3	3	2	2	14
Ä	4	3	3	4	4	18
Ö	2	3	3	2	4	14
Å	3	2	3	2	2	12
AA	3	3	3	2	3	14
BB	3	2	3	4	3	15
CC	4	3	2	3	3	15
DD	2	4	2	2	2	12

[15] Personal skills items:
1. Acquiring job or career related knowledge and skills
2. Writing clearly, accurately, and effectively
3. Thinking critically and/or analytically
4. Learning effectively on your own, so you can identify, reserach, and complete a given task
5. Working effectively with other individuals

3.2.3 Results for the MSLQ in the present study

For the third part of the questionnaire, the MSLQ, the scores of each student for each factor are computed by summing the scores of each item that make up the factor and taking the mean, as is instructed by Pintrich et al. (1991, 5), the students could score the items as follows: 1 – not at all true for me to, 2 – almost never true for me, 3 – usually not true for me, 4 – occasionally true for me, 5 – sometimes true for me, 6 – true for me, and 7 – very true for me. The scores for the items 22, 23, 33, and 34 have been reversed. Tables 11 to 14 (pages 34-37) show each students' score for the four factors of the MSLQ, together with the total and the score for each individual item (the wording of each item can be found in chapter 2.3.3 or in Attachment 1); colour coding was applied to the scores, to make trends better visible (1 = brown; 2 = dark blue; 3 = red; 4 = green; 5 = purple; 6 = light blue and 7 = orange).
Table 10 lists the lowest and highest scores for each factor as well as the means and the standard deviations.
The lowest value for the Intrinsic value factor was 3, and the highest 7, with a mean of 5.2 and a standard deviation of 0.86. The score of 3 was computed for the answers of student M and the score of 7 was computed for student O (Table 11). The factor Self-efficacy shows the lowest value of 3 and the highest with 6.8, with a mean of 4.9 and a standard deviation of 0.97. Student M has the lowest score of 3 and student O the highest of 6.8 (Table 12). Cognitive strategy use has 3.5 as the lowest score and 6.3 as the highest with a mean of 4.7 and a standard deviation of 0.66. Student W shows the lowest value (3.5) and student A the highest (6.3) (Table 13). Finally Self-regulation has the lowest score of 3.2, the highest with 6.5, and a mean of 4.7 and a standard deviation of 0.75. Student X has the lowest score with 3.2 and student O the highest score with 6.5 (Table 14). The following students scored in all four factors below the mean: M, W, Y and Å. Student O scored in all but the Strategy use factor the highest score.

Table 15 shows how many times each score was selected from the students for an item and how many times each score was selected in total for that factor; the sum as well as the percentages for the scores of the factors are indicated.

Table 10. The lowest and highest scores of each of the factors of the MSLQ are presented together with the means and the standard deviations (SD)

	N	Lowest value	Highest value	Mean	SD
Intrinsic value	32	3	7	5.2	0.86
Self-efficacy	32	3	6.8	4.9	0.97
Cognitive strategy use	32	3.5	6.3	4.7	0.66
Self-regulation	32	3.5	6.5	4.7	0.75

Table 11. Students' scores for Intrinsic value are displayed together with the answer scores for each question in the scale. Colour coding was applied to make the differences in the answers of the items more visible

	Intrinsic value										
Student	**1.**	**3.**	**4.**	**6.**	**9.**	**12.**	**13.**	**15.**	**18.**	**Total**	**Score**
A	7	7	5	7	6	7	7	7	7	60	6.6
B	5	5	6	6	5	5	5	6	6	49	5.4
C	6	6	6	6	6	5	4	4	5	48	5.3
D	6	6	4	4	6	6	4	5	5	46	5.1
E	6	5	4	4	4	7	4	4	6	44	4.8
F	6	6	5	6	6	7	7	6	6	55	6.1
G	7	7	7	7	7	7	6	7	7	62	6.8
I	4	7	7	6	4	6	7	5	6	52	5.7
J	6	6	7	6	5	6	6	5	5	52	5.7
K	6	6	7	6	6	6	6	6	6	55	6.1
L	4	4	4	4	4	4	4	4	4	36	4.0
M	1	6	4	1	2	7	2	2	2	27	3.0
N	4	6	7	5	6	5	4	4	4	45	5.0
O	7	7	7	7	7	7	7	7	7	63	7.0
P	5	4	4	4	6	6	4	4	6	43	4.7
Q	6	6	6	5	7	7	7	6	7	57	6.3
R	7	6	6	6	4	5	4	5	5	48	5.3
S	6	6	6	5	5	6	6	6	5	51	5.6
T	6	6	4	5	4	6	5	5	6	47	5.2
U	6	5	4	4	6	6	4	5	6	46	5.1
V	5	6	6	7	4	5	7	6	7	53	5.8
W	4	6	6	5	4	4	4	5	5	43	4.7
X	3	6	6	7	6	6	7	7	6	54	6.0
Y	6	4	4	4	4	4	4	4	4	38	4.2
Z	6	5	5	4	5	6	6	5	6	48	5.3
Ö	6	6	6	6	5	7	7	6	6	55	6.1
Ä	6	6	3	4	5	7	5	5	5	46	5.1
Å	4	5	4	4	5	3	5	4	3	37	4.1
AA	4	3	6	5	3	5	3	5	5	39	4.3
BB	4	5	6	6	4	5	6	6	6	48	5.3
CC	6	6	5	5	5	6	6	5	6	50	5.5
DD	3	4	5	4	4	5	2	5	6	38	4.2

Table 12. Students' scores for the Self-efficacy factor are displayed, on the right hand side the totals as well as the scores (means) for each students answer score are shown. Color-coding was applied to the scores to make answer trends more visible

	Self-efficacy										
Student	**2.**	**5.**	**7.**	**8.**	**10.**	**11.**	**14.**	**16.**	**17.**	**Total**	**Score**
A	7	6	7	7	7	6	6	6	7	59	6.5
B	5	6	5	4	4	5	4	3	4	40	4.4
C	7	7	7	7	6	4	4	4	5	51	5.6
D	7	6	7	6	6	6	5	6	6	55	6.1
E	7	5	6	6	5	6	6	4	5	50	5.5
F	7	5	7	7	6	6	7	7	6	58	6.4
G	5	6	5	5	7	5	5	6	6	50	5.5
I	4	7	4	3	6	5	3	3	6	41	4.5
J	6	5	5	5	6	6	5	6	6	50	5.5
K	6	6	6	6	5	6	5	4	6	50	5.5
L	4	4	4	4	4	4	4	4	4	36	4.0
M	1	3	4	7	2	2	1	2	5	27	3.0
N	5	6	4	5	7	6	3	5	5	46	5.1
O	7	7	7	7	7	7	7	6	7	62	6.8
P	5	6	4	4	6	5	4	5	6	45	5.0
Q	5	6	6	7	7	7	5	6	7	56	6.2
R	5	5	6	5	4	4	4	4	4	41	4.5
S	6	5	6	6	5	6	4	5	5	48	5.3
T	5	4	4	6	6	6	4	5	4	44	4.8
U	5	5	4	5	4	5	4	4	5	41	4.5
V	4	7	6	4	6	6	5	4	6	48	5.3
W	6	4	4	6	3	4	4	4	3	38	4.2
X	3	5	4	3	6	5	3	5	5	39	4.3
Y	4	4	4	4	4	4	4	4	4	36	4.0
Z	6	6	6	6	6	5	6	5	6	52	5.7
Ö	5	6	6	6	5	6	5	5	6	50	5.5
Ä	4	3	2	4	4	4	3	3	4	31	3.4
Å	6	4	4	7	5	4	4	4	4	42	4.6
AA	3	2	4	4	3	3	2	4	4	29	3.2
BB	4	5	5	5	4	5	4	5	5	42	4.6
CC	6	5	6	5	6	6	5	5	6	50	5.5
DD	3	4	3	4	4	4	2	2	3	29	3.2

The distribution of the scores for the items of the Intrinsic value factor (Table 11) are dominated by option 6 – true for me (light blue). This score was selected 101 (35.06%) times by the students, followed by almost equal selection of option 4 – occasionally true for me (63 times; 21.87%) and 5 – sometimes true for me (61 times; 21.18%). Option 7 – very true for me was only selected 48 times (16.6%). Options 1 to 3 have a combined score of 13. The scores for 6 – true for me (light blue) are distributed almost equally across Table 11, the scores for option 4 – occasionally true for me (green) are somewhat more accumulated around the centre of the table, whereas option 5 –

Table 13. The scores for all 13 items making up the factor Cognitive strategy use are displayed, as well as the total for the items that make up the factor for each student and the score. Color-coding of the answer scores supports the visibility of trends

	Cognitive strategy use													
Student	**19.**	**20.**	**22.**	**24.**	**25.**	**26.**	**27.**	**30.**	**32.**	**35.**	**37.**	**38.**	**40.**	**Total**	**Score**
A	5	2	7	7	5	7	7	7	7	7	7	7	7	82	6.3
B	5	5	5	5	5	4	3	3	4	5	3	4	5	56	4.3
C	5	5	3	4	4	5	1	5	4	4	5	1	5	51	3.9
D	5	6	6	4	5	3	2	5	5	6	3	2	7	59	4.5
E	3	4	4	5	5	4	5	5	5	5	5	3	5	58	4.4
F	5	5	6	5	6	6	6	4	5	6	2	6	6	68	5.2
G	7	7	2	6	6	4	6	4	6	7	6	7	6	74	5.6
I	4	5	3	4	7	5	2	4	5	6	4	6	6	61	4.6
J	5	5	6	5	5	6	5	5	7	6	5	4	6	70	5.3
K	6	6	5	5	5	6	6	4	5	6	5	6	6	71	5.4
L	4	4	4	4	4	4	4	4	4	4	4	4	4	52	4.0
M	6	7	1	2	7	4	2	2	5	3	3	2	5	49	3.7
N	3	4	2	4	5	5	6	5	5	4	6	5	3	57	4.3
O	6	5	6	7	5	6	2	7	6	7	4	5	7	73	5.6
P	5	6	6	5	5	6	6	4	6	6	4	6	6	71	5.4
Q	7	6	7	5	5	5	4	4	5	6	4	5	7	70	5.3
R	6	5	5	4	5	6	5	4	6	5	3	2	6	62	4.7
S	4	6	5	6	6	6	6	3	3	4	4	4	6	63	4.8
T	5	6	3	6	6	5	5	6	5	6	6	4	6	69	5.3
U	4	5	5	5	4	4	6	6	5	6	3	5	6	64	4.8
V	4	5	5	6	5	4	5	5	6	5	3	3	6	62	4.7
W	5	4	4	3	4	3	3	3	4	4	3	2	4	46	3.5
X	2	4	4	6	5	5	1	2	6	5	2	1	7	50	3.8
Y	4	4	4	4	4	4	4	4	4	4	4	4	4	52	4.0
Z	4	4	6	5	4	4	4	3	4	6	4	4	5	57	4.3
Ö	6	6	5	6	6	6	6	5	6	6	4	4	6	72	5.5
Ä	2	6	6	5	5	4	6	7	3	5	4	3	6	62	4.7
Å	5	2	3	4	3	3	3	2	5	4	3	5	5	47	3.6
AA	6	6	4	4	5	5	5	6	5	5	6	2	6	65	5.0
BB	5	6	4	5	7	5	4	5	5	6	5	4	5	66	5.0
CC	5	6	4	5	6	5	5	5	4	6	5	5	6	67	5.1
DD	4	5	4	4	4	6	6	5	5	5	6	4	5	63	4.8

sometimes true for me (purple) is stronger represented in the bottom part of the table in contrast to option 7 – very true for me (orange) which is more often represented in the upper part of the table. For the Self-efficacy factor (Table 12) the scores shifted towards option 4 – occasionally true for me (green) which was selected 79 times (27.43%), closely followed by option 6 – true for me (light blue) which was selected 77 times (26.73%) and by option 5 – sometimes true for me (purple) which was selected 67 times (23.26%). Option 7 – very true for me (orange) and 3 – usually not true for me (red) have been selected 35 times (12.15%) and 20 times (6.9%), respectively.

Table 14. Self-regulation factor, totals for students and scores for each student are displayed. Color-coding was applied to scores for trend indication

	Self-regulation										
Student	**21.**	**23.**	**28.**	**29.**	**31.**	**33.**	**34.**	**36.**	**39.**	**Total**	**Score**
A	7	7	3	6	7	7	3	7	7	54	6.0
B	5	5	3	5	4	5	5	5	5	42	4.6
C	3	5	3	5	5	4	6	4	5	40	4.4
D	6	7	5	5	6	6	6	6	5	52	5.7
E	3	6	3	6	3	6	6	7	6	46	5.1
F	6	6	5	6	5	5	4	4	6	47	5.2
G	6	7	5	5	7	4	6	5	2	47	5.2
I	5	4	2	4	4	5	5	6	3	38	4.2
J	6	6	5	6	7	5	7	5	5	52	5.7
K	6	6	4	6	5	6	6	5	6	50	5.5
L	4	4	4	4	4	4	4	4	4	36	4.0
M	3	6	1	3	3	2	6	5	2	31	3.4
N	5	3	6	4	6	4	5	5	4	42	4.6
O	7	7	7	7	6	6	6	7	6	59	6.5
P	5	5	6	6	4	5	7	6	3	47	5.2
Q	5	7	5	4	6	7	7	5	7	53	5.8
R	4	6	3	6	4	4	6	5	5	43	4.7
S	5	4	3	4	4	4	6	4	3	37	4.1
T	5	6	4	3	5	2	5	6	5	41	4.5
U	4	5	5	5	5	4	5	5	3	41	4.5
V	5	6	3	4	5	6	5	5	4	43	4.7
W	3	5	3	3	4	5	5	4	3	35	3.8
X	2	3	1	4	2	4	5	5	3	29	3.2
Y	4	4	4	5	5	4	4	4	4	38	4.2
Z	4	7	2	5	2	6	4	5	4	39	4.3
Ö	5	7	5	6	6	6	6	5	6	52	5.7
Ä	6	4	3	3	4	6	6	5	3	40	4.4
Å	5	2	3	6	4	4	4	5	4	37	4.1
AA	6	5	3	6	5	4	6	6	6	47	5.2
BB	5	5	4	4	5	4	7	5	5	44	4.8
CC	5	5	4	6	5	5	5	5	6	46	5.1
DD	6	4	2	5	5	5	5	4	4	40	4.4

As the color-coding illustrates (Table 12) option 4 prevails in the centre towards the bottom of the table, option 6 is well distributed across the table and option 5 as well; whereas option 7's distribution is almost completely restricted to the upper half of the table, with only two occurrences in the bottom half. Student M unites both selections of option 1 – not at all true for me on him/her as well as three times selection of option 2 – almost never true for me. For the Cognitive strategy use factor option 5 – sometimes true for me was selected 122 times (29.46%), followed by option 4 - occasionally true for me and option 6 – true for me equally with 102 times (24.6%) each. Option 3 – usually true for me, 7 – very true for me and 2 – almost never true for me

were selected 33 (7.9%), 29 (7.0%) and 21 (5.0%) times, respectively. Again a clear pattern in the distribution of the answered options emerges on Table 13. Options 5, 4, 6 and 2 are almost evenly distributed across the table, option 7 has the most frequent occurrence in the upper half of the table and option 3 has been selected more frequent in the lower part of the table. As is displayed in Table 14 the score distribution for the Self-regulation factor is as follows: option 5 – sometimes true for me was selected 88 (30.5%) times, followed by almost equal selection of option 6 – true for me and option 5 – sometimes true for me, with 66 (22.91%) and 65 (22.56%), respectively. Option 3 – usually not true for me was selected 31 (10.76%) times and option 7 – 25 (8.68%) times. A similar pattern as before emerges in the distribution of the scores across the table, options 5, 6 and 4 are almost evenly distributed across the table, whereas option 7 has a higher occurrence in the upper half of the table and options 3 and 2 in the lower half.

Table 15. Distribution and sum of the scores for the items of the MSLQ are shown

Items	1 – not at all true for me	2 – almost never true for me	3 – usually not true for me	4 – occasionally true for me	5 – sometimes true for me	6 – true for me	7 – very true for me
				Intrinsic value			
1.	1	0	2	7	3	15	4
3.	0	0	1	4	6	17	4
4.	0	0	1	9	5	11	6
6.	1	0	0	10	7	9	5
9.	0	1	1	10	8	9	3
12.	0	0	1	3	8	11	9
13.	0	2	1	10	4	7	8
15.	0	1	0	7	12	8	4
18.	0	1	1	3	8	14	5
SUM (%)	**2 (0.69)**	**5 (1.73)**	**8 (2.7)**	**63 (21.87)**	**61 (21.18)**	**101 (35.06)**	**48 (16.6)**
				Self-efficacy			
2.	1	0	3	6	9	7	6
5.	0	1	2	6	9	10	4
7.	0	1	1	12	4	9	5
8.	0	0	2	8	7	8	7
10.	0	1	2	8	5	11	5
11.	0	1	1	8	8	12	2
14.	1	2	4	12	8	3	2
16.	0	2	3	11	9	6	1
17.	0	0	2	8	8	11	3
SUM (%)	**2 (0.69)**	**8 (2.7)**	**20 (6.9)**	**79 (27.43)**	**67 (23.26)**	**77 (26.73)**	**35 (12.15)**
				Cognitive strategy use			
19.	0	2	2	8	12	6	2
20.	0	2	0	7	10	11	2
22.	1	2	4	9	7	7	2
24.	0	1	1	10	12	6	2
25.	0	0	1	7	15	6	3
26.	0	0	3	10	9	9	1
27.	2	4	3	5	7	10	1
30.	0	3	4	9	8	3	3
32.	0	0	2	7	14	7	2
35.	0	0	1	7	8	13	3
37.	0	2	8	10	6	5	1
38.	2	5	3	10	6	4	2
40.	0	0	1	3	8	15	5
SUM (%)	**5 (1.2)**	**21 (5.0)**	**33 (7.9)**	**102 (24.6)**	**122 (29.46)**	**102 (24.6)**	**29 (7.0)**
				Self-regulation			
21.	0	1	4	5	12	8	2
23.	0	1	2	6	8	8	7
28.	2	3	11	6	7	2	1
29.	0	0	4	8	8	11	1
31.	0	2	2	9	11	5	3
33.	0	2	0	12	8	8	2
34.	0	0	1	5	10	12	4
36.	0	0	0	7	17	5	3
39.	0	2	7	7	7	7	2
SUM (%)	**2 (0.69)**	**11 (3.8)**	**31 (10.76)**	**65 (22.56)**	**88 (30.5)**	**66 (22.91)**	**25 (8.68)**

4 Discussion

The anonymous questionnaires received an alphabetic character (A, B, C, and so on) in the order in which the students returned the completed questionnaires through the webropol system, so A was the first student to return and DD the last one. As the evaluation of the results of the R-SPQ-2F, the SE and the MSLQ show, the students who are interested in learning and engaged coincide with the students who replied immediately to the survey, whereas the students plotting at the bottom of, for example Table 2, are the ones who only answered the questionnaire after the second and third reminder were send out.

Due to a lack of guidelines in the literature (also in Biggs et al. 2001) where to draw the line between a surface or a deep approach to learning, suggestions on the data presentation as found in Hamm and Robertson (2010, 957) were followed. It was considered that a DA above the mean indicates a deep approach and a SA above the mean a surface approach; whereas when the values for DA and SA showed a small difference this indicated no preference for either approach. Hamm and Roberts (2010, 959) arranged their R-SPQ-2F results in a table with the students ordered from a deep preference to learning at the top and a surface approach to learning in the bottom. It is assumed that a student who selects mainly D (this item is frequently true of me) or E (this item is always or almost always true of me) as the answer to the items belonging to the DA part of the scale and answers the items belonging to the SA part of the scale mainly with B (this item is sometimes true of me) or A (this item is never or rarely true of me) shows a deep approach to learning, and the opposite would indicate a surface approach to learning. However, as becomes evident when analysing the results of the R-SPQ-2F, the answer is not that straight forward. All the answer options both in the DA and the SA were employed by the students to a varying degree (Table 2), which suggests that the items and the wording of them in the DA and the SA seem to have a large impact on the selection of the answer options by the students. And that the students although having an overall preference for a deeper approach to learning still select to answer certain items with a lower score, indicating that the item might not be of importance to them. As is depicted in Figure 2 the students plot in four squares depending on their approaches to learning, three students O, D and M plot outside the standard deviations

for the DA and the SA, all other students plot within the grey shaded area. Students O and D have a distinct DA and student M a distinct SA.

To make a comparison of the present data with data from the literature, e.g. Leung, Ginns and Kember (2008), the standardized mean difference was calculated (Table 16). In their study Leung et al. (2008, 262), report higher scores for both DA and SA for students from Hong Kong compared to the students from Sydney, Australia, which indicates that students from Hong Kong apply intermediate approaches to a greater extent than the students from Sydney. Students employing intermediate approaches can be described as using methods of memorizing and of understanding simultaneously, memorization of material for assessments to achieve a good grade and an understanding of the concepts of the material to support the learning and understanding of concepts in later parts of the studies. Table 16 displays the comparison of the mean R-SPQ-2F (Cohen´s d and the 95% confidence interval) results from the present study with the reported results from Australia and Hong Kong by Leung et al. (2008, 263). Comparisons of the means for DA and SA from the present study with the results presented by Leung et al. (2008, 263) indicate, that the mean DA (31.5) is very close to the observed mean in the DA by the students from Hong Kong (31.4) with d 0.01, whereas the mean for the SA (21.5) is close to the mean for the SA of the students from Sydney (20.7) with d 0.1.

Cohen (1992, 156) reports standard mean effect sizes d with values of 0.2 as having a small difference, values of 0.5 as medium and values of 0.8 and larger as having a large difference. From this follows that the scores for the DA in the present study have a small difference, not significant, to the results from Hong Kong as reported by and that the results from the SA in the present study have a small difference also not significant to the results from Australia as reported by Leung et al. (2008, 263). The comparison of the DA results of the R-SPQ-2F in Table 16 shows that the students in the present study have a similar approach to the DA than the students from Australia and Hong Kong, with an approach even more similar to the students from Hong Kong than to the Australian students. However, the comparison of the SA results indicates that here the DP students employ similar approaches to the students from Australia and that the correlation of the results with the results from the students from Hong Kong is negative. These results indicate that the DP students are employing typical

learning approaches characterized for western countries (Leung et al. 2008, 264). The approaches to learning, DA and SA, are lying at opposing ends to each other with the intermediate approach connecting them.

Table 16. Comparison of Mean and Standard Deviation of Deep and Surface Approach Scores of the current study with data from Australia and Hong Kong (Leung et al. 2008, 263)

Deep Approach						
Australia			DP students			
N	Mean	SD	*N*	Mean	SD	d *(95% Confidence Interval)*
1146	29.8	7.3	32	31.5	6.62	0.2 (–0.11. 0.58) *ns*
Hong Kong			DP Students			
N	Mean	SD	*N*	Mean	SD	d *(95% Confidence Interval)*
1249	31.4	5.9	32	31.5	6.62	0.01 (–0.3, 0.36) *ns*
Surface Approach						
Australia			DP students			
N	Mean	SD	*N*	Mean	SD	d *(95% Confidence Interval)*
1146	20.7	6.7	32	21.5	6.15	0.1 (–0.23. 0.47) *ns*
Hong Kong			DP Students			
N	Mean	SD	*N*	Mean	SD	d *(95% Confidence Interval)*
1249	25.6	6.3	32	21.5	6.15	–0.6 (–1.0, –0.29)

NOTE: d: standardized mean difference; *ns*: not significant at 0.5 significance level

Standardized mean differences (Cohen's d) for all three parts of the questionnaire were calculated using the online effect size calculator (Wilson, The Campbell Collaboration).

Because of the critique to the sub-scale use of the R-SPQ-2F and the problematic reliability of the sub-scales, see Chapter 1.2 for details, the sub-scales for the DA and the SA were not computed in this study. As is suggested in Stes et al. (2013, 6,) and Hamm and Robertson (2010, 952) performed in their study, the understanding of students approaches to learning would greatly improve when the R-SPQ-2F would be accompanied by individual interviews, semi-structured or structured, to add a set of qualitative data to the quantitative results. This is especially possible when the R-SPQ-2F is administered to a small group of students, like a class or two. The interview would provide additional insight into students approaches to learning and would clarify possible ambiguous answers from the R-SPQ-2F in the DA or SA.

Ahlfeldt et al. (2005, 12) report a Cognitive level mean score of 14.08 and a Personal skills mean score of 13.46 of the SE in their study of 56 classes at a upper mid-western university in the USA. These results are similar to the results for Cognitive level and Personal skills means from the present study, which are 14 and 13.9 respectively. The standard deviations for the Cognitive level (2.4) and the Personal skills (2.8) is also close to the values as reported by Ahlfeldt et al. (2005, 12), which are 2.8 and 3.4 respectively, to show the similarity between the results Cohen's d was calculated, the results are presented in Table 17. As is depicted in Table 8 the item on synthesizing received the most answers in option 2 – some. Although the change of the program to process-based studies which are employing project-based methods to a large degree, which are supposed to increase engagement and motivation in students, as well as improve abilities of analysing, synthesizing of material, evaluation and application of concepts to new situation, these seem not to have an as big an impact on the students as of yet. A similar conclusion can be drawn from the results of the Personal skills part of the SE. Overall, the students indicated that the present course (e.g. the DP) improved or influenced their Personal skills development quite a bit, however, the ability to write clearly, accurately and effectively had equal scores for option 3 – quite a bit and 2 – some, which shows that there is room for improvement. The item on learning was even answered with equal scores for options 4 – very much, 3 – quite a bit and 2 – some, which shows that the DP was able to improve the learning abilities of one third of the students very much and for two thirds to some extent. The almost equal distri-

bution of all the answer options across both Tables 8 and 9 indicates that the students show very similar levels engagement to the studies, in contrast to the results of the R-SPQ-2F where the students with a deeper approach to learning were located towards the upper part of the table (e.g. Table 2). An accumulation of the students answers to the items on option 3 – quite a bit and its rather equal distribution across the Tables 8 and 9 could also be explained by the fact that a 4-point Likert type scale as was used by Ahlfeldt et al. (2005, Attachment 1) for the SE. A 4-point Likert type scale gives the respondents not the option to answer the neutral mid-point but requires him/her to choose the answers that fits his/her feelings and opinion best, which results in little variance of the results (Preston and Colman 2000, 12). Much psychometric research in the past has concentrated on defining what type of scales provide the most reliable and valid results to a survey (e.g. Chang 1994; Cummins & Gullone 2000; Preston & Colman 2000). Preston and Colman (2000, 11) conclude in their study on validity and reliability on optimal numbers in response categories in rating scales that test – retest reliability, internal consistency, validity coefficients and discriminating power was lowest for scales with few response categories, e.g. 4-point Likert type scales, and that scales with more response categories performed much better in all of the conducted tests, especially ones with 7-response categories. However, scales with few response categories are quick and easy to use (Preston and Colman 2000, 13), and in a case such as the present, a class-room survey on student engagement performed in class and conducted by the teacher, probably best suited to the purpose.

Although it was decided to leave the Cooperative learning part out of the present questionnaire, evaluating the results showed, that it would have been of advantage to be able to calculate an Engagement score for the existing data to compare it to the results by Ahlfeldt et al. (2005, 12), and not just the means for the scores of the Cognitive level and the Personal skills part of the questionnaire. With an Engagement score available for the present study this could have also been compared to the results of the NSSE as reported in Ahlfeldt et al. (2005, 13).

In their discussion Ahlfeldt et al. (2005, 17) point out that an increasing use of Problem-based Learning in class-room instruction is indicative for higher engagement levels, as well as smaller class sizes. Although a thorough literature research was conducted it was not possible to find publications where the SE questionnaire as developed by

Ahlfeldt et al. (2005) was utilized and results reported. This is probably due to the fact that the questionnaire was constructed with the aim that it could be easily applied in university and college classes and courses to investigate upon the student engagement for that particular course. Traditionally teachers of certain courses are not required to nor have the need to publish their results, they are used by them only to improve their own teaching approach in their classes.

Table 17. Comparison of Means and Standard Deviation for the SE from the present study with the results by Ahlfeldt et al. (2005, 12)

	Present Study			Ahlfeldt et al. (2005, 12)			
	N	Mean	SD	*N*	Mean	SD	d *(95% Confidence Interval)*
Cognitive level	32	14	2.4	1823	14.08	2.8	–0.02 (–0.37, 0.32) *ns*
Personal skills	32	13.9	2.8	1814	13.46	3.4	0.12 (–0.21, 0.47) *ns*

NOTE: d: standardized mean difference; *ns*: not significant at 0.5 significance level

Pintrich and De Groot (1990, 35) reported the means and the SD for the short version of the MSLQ in their publication. In Table 18 the means and SD for the four factors as measured in the present study are compared with the results from Pintrich and De Groot (1990, 35). As the results show, the overlap of the means and Cohen's d from the present study to the means as reported by Pintrich and De Groot (1990, 35) is not very big, especially the results for Self-efficacy and Cognitive strategy use are very different. In general the results from the present study are much lower than results reported by Pintrich and De Groot (1990, 35). The Intrinsic value factor scored highest on the answer option 6 – true for me, out of all the factors, it also shows the highest mean, which indicates that the students are internally motivated to learn and they perceive the content of the course as important knowledge for current work but also as an asset for the future. Answer options 4 to 7 also received high scores and the combined scores for options 1-3 can be neglected (see Table 15). For the Self-efficacy factor the results shift towards the middle of the scale, answer option 4 – occasionally true for me, received the highest scores with 79 closely followed by 6 – true foe me and 5 – sometimes true for me, with 77 and 67 respectively. Characteristically for the Self-

efficacy factor is the separation of Table 12 into an upper part where answer option 7 – very true for me prevails and a lower part where answer options 3 – usually not true for me and 2 – almost never true for me prevail. Answer option 4 on the scale used by Pintrich and De Groot (1990) represents the mid-point of the score continuum, 4 – occasionally true for me. This is almost a neutral statement, 50% of the times it is true and 50% of the times it is not. It might also be an indication for the students not possessing a well-developed self-confidence. However, items on the Self-efficacy factor contain statements on knowing more than others on a particular topic, on having better skills than others, on being a good student compared to others and in expecting to do well. These are all statements that require the students to assess themselves and comparing oneself to others, which is difficult to do because one cannot for certain know how much the other students know or how good they are in certain subject or on certain topics. It might also reflect the difficulties that some of the students might perceive with the changed study structure and being in a study situation very different to what they have experienced so far. The Cognitive strategy use factor answer option 5 – sometimes true for me was selected most times (122), followed by 4 and 6 with equal numbers (102). Again answer options 5-7 can be found in the upper part of the table (Table 13) and the lower ones on the lower half of the table. This factor investigates the strategies the students are employing when studying or preparing material, such as making notes, outlining important ideas, prompting important facts to one-self, and using information reported by others to them. Again these are strategies that many of the students might not be very familiar with, because they are commonly used in process-based learning environments but not so much in a traditional school system (see Chapter 1.1 for details). Similar to the Cognitive strategy use factor the Self-regulation factor scored highest on answer option 5 – sometimes true for me (88) followed by 6 – true for me and 4 – occasionally true for me with 66 and 65 respectively (Table 15). Again the scores for answer options 1-3 are much higher than they were for the factors Intrinsic value and Self-efficacy. Answer option 7 – very true for me is almost solely present in the upper part of Table 14, but option 3 – usually not true for me is almost evenly distributed across it. The Self-regulation factor comprises items such as preparing extra material, working even if it is uninteresting, consciously preparing for study and recapping already learned material. Pintrich and De Groot (1990, 37)

point out that higher levels of Self-efficacy and Intrinsic value correlate with higher levels of Cognitive strategy use as well as with higher levels of Self-regulation. This implies that if students learn to improve their self-efficacy and are internally motivated they will employ cognitive strategies better, which will improve their engagement with their studies, and will be more self-regulated, which will improve their determination to continue with a task even if it is boring. Also Pintrich and De Groot (1990, 38) suggest to add additional qualitative data through for example interviews to the quantitative data from the survey to improve the results of the survey and to limit possible misinterpretations of the items.

Although the long version of the MSLQ (Pintrich et al. 1991) allows for the selection of more subscales (15) than the short version (5), for the present study it was deemed that the short version contains all the necessary variables to provide valid answers to the aim of the study.

Table 18. The Means and Standard Deviations for the four variables as applied in the present study are compared to the results of Pintrich and De Groot (1990, 35)

	Present Study		Pintrich and De Groot (1990, 35)		
	Mean	SD	Mean	SD	d *(95% Confidence Interval)*
Intrinsic value	5.2	0.86	5.44	0.89	–0.27 (–0.64, 0.1)
Self-efficacy	4.9	0.97	5.47	1.00	–0.57 (–0.95, –0.19)
Cognitive strategy use	4.7	0.66	5.20	0.77	–0.66 (–1.0, –0.28)
Self-regulation	4.7	0.75	5.03	0.83	–0.4 (–0.78, –0.02)

NOTE: d: standardized mean difference

Standardized mean difference (Cohen's d) was calculated using the online effect size calculator (www.campbellcollaboration.org/resources/effect_size_input.php).

5 Conclusions

All three scales, the R-SPQ-2F, the SE and the MSLQ, used in this questionnaire are easily applicable in a course or programme, and they all give valuable insights to students' approaches to learning, their engagement to the studies and their motivation to study to the teacher or facilitator. As is suggested by Hamm and Roberts (2010), Stes et al. (2013) and Pintrich and De Groot (1990) when administering the R-SPQ-2F or the MSLQ, this could be done in conjunction with a structured or semi-structured interview following the questionnaire, to reveal possible discrepancies between the learning preferences as emerged through the R-SPQ-2F or the MSLQ; this approach would add qualitative data and give students the possibility to verbally comment on their skills and learning approaches. The interview results would provide the study program with important insights on tailoring of the processes better to the needs of each individual student, e.g. personalized study plans, and in this way greatly improve the value of the program for the learning outcomes of the students. It would also give the students the opportunity to critically review their approaches to studying and the acquisition of competencies as well as support and develop their own assessment of their skills and competencies so far acquired. As emerged from the present study, students employ various learning approaches. Some students are characterized by a deep approach, others by a surface approach and in turn others by an intermediate approach, which seems to be learning situation and task dependent. Results from the MSLQ indicate that there is room to improve student's cognitive strategies, their self-efficacy and motivation to learn and their knowledge acquisition. However, the higher results for the intrinsic value, or intrinsic motivation, can be attributed to the fact that the students have to go through a demanding selection process during the entrance examination, where those students are selected who display an interest in and an eagerness to learning, self-development and motivation to study. The DP is a specialized study programme with an intake of only 20 students per year, so due to the specialization only students who are from the outset interested in the study topic apply to the programme. The results of the SE indicate that students already have a good grasp on these strategies but especially some individuals need to develop their Cognitive strategies and their Personal skills more.

Small class sizes and the use of process-based learning methods and student-centred learning as a means for teaching and learning increases the level of student engagement and motivation, as well as the development of the cognitive skills with projects and tasks that cater especially to this. The results indicate that the changes of the curriculum have been a good decision but that the preparations of the processes to cater better to the individual needs of the students still need to be improved. The questionnaire as such or split into its separate parts in conjunction with a personal interview is an easy and fast way to investigate on a regular basis in the future the engagement and motivation of the students to the studies.

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Attachments

Attachment 1. Questionnaire

Motivation – Engagement – Competence

Dear Student!

Thank you for taking your time to answer the questions in this survey. The questionnaire is part of my Bachelor Thesis. I am investigating engagement in learning, reasons for learning, study processes, strategies for learning, motivation and competence.

Yours Frauke Kubischta, DP 10

1. The following questions are directed at your attitude towards your studies and your usual way of studying. There is no right way of studying. It depends on what suits your own style and course you are studying in. It is accordingly important that you answer each question as honestly as you can. If you think your answer to a question would depend on the subject being studied, give the answer that would apply to the subject(s) most important to you. Please choose the one most appropriate respond to each question. Fill the answer in that best fits your immediate reaction. Do not spend a long time on each item: your first reaction is probably the best one.

	A - this item is never or rarely true of me	B - this item is sometimes true of me	C - this item is true of me about half the time	D - this item is frequently true of me	E - this item is always or almost always true of me
1. I find that at times studying gives me a feeling of deep personal satisfaction *	○	○	○	○	○
2. I find that I have to do enough work on a topic so that I can form my own conclusion before I am satisfied *	○	○	○	○	○

3. My aim is to pass the course while doing as little work as possible *	○	○	○	○	○
4. I only study seriously what´s given out in class or in the course outlines *	○	○	○	○	○
5. I feel that virtually any topic can be highly interesting once I get into it *	○	○	○	○	○
6. I find new topics interesting and often spend extra time trying to obtain more information about them *	○	○	○	○	○
7. I do not find my course very interesting so I keep my work to a minimum *	○	○	○	○	○
8. I learn some things by rote, going over and over them until I know them by heart even if I do not understand them *	○	○	○	○	○
9. I find that studying academic topics can at times be as exciting as a good novel or movie *	○	○	○	○	○
10. I test myself on important topics until I understand them completely *	○	○	○	○	○
11. I find I can get by in most assessments by memorizing key sections rather than trying to understand them *	○	○	○	○	○
12. I generally restrict my study to what is specifically set as I think it is unnecessary to do anything extra *	○	○	○	○	○
13. I work hard at my studies because I find the material interesting *	○	○	○	○	○

14. I spend a lot of my free time finding out more about interesting topics which have been discussed in different classes *	○	○	○	○	○
15. I find it is not helpful to study topics in depth. It confuses and wastes time, when all you need is a passing acquaintance with topics *	○	○	○	○	○
16. I believe that lecturers shouldn´t expect students to spend significant amounts of time studying material everyone knows won´t be examined *	○	○	○	○	○
17. I come to most classes with questions in mind that I want answering *	○	○	○	○	○
18. I make a point of looking at most suggested readings that go with the lectures *	○	○	○	○	○
19. I see no point in learning material which is not likely to be in the examination *	○	○	○	○	○
20. I find the best way to pass examinations is to try to remember answers to likely questions *	○	○	○	○	○

2. To what extent has this course emphasized the mental activities listed below?

	4 very much	3 quite a bit	2 some	1 very little
1. Memorizing facts, ideas or methods from your course and readings so you can repeat them in almost the same form *	○	○	○	○
2. Analyzing the basic elements of an idea, experience or theory such as examining a specific case or situation in depth and considering its components *	○	○	○	○

3. Synthesizing and organizing ideas, information, or experiences into new, more complicated interpretations or relationships *	○	○	○	○
4. Evaluating the value of information, arguments, or methods such as examining how others gathered and interpreted data and assessing the accuracy of their conclusions *	○	○	○	○
5. Applying theories and/or concepts to practical problems or new situations *	○	○	○	○

3. To what extent has this course contributed to your knowledge, skills, and personal development in the following ways?

	4 very much	3 quite a bit	2 some	1 very little
1. Acquiring job or career related knowledge and skills *	○	○	○	○
2. Writing clearly, accurately, and effectively *	○	○	○	○
3. Thinking critically and/or analytically *	○	○	○	○
4. Learning effectively on your own, so you can identify, research, and complete a given task *	○	○	○	○
5. Working effectively with other individuals *	○	○	○	○

4. Please rate the following items based on your behavior in the current learning process.

	1 not at all true for me	2 almost never true for me	3 usually not true for me	4 occasionally true for me	5 sometimes true for me	6 true for me	7 very true for me
1. I prefer project work that is challenging so I can learn new things *	○	○	○	○	○	○	○
2. Compared with other students in this class I expect to do well *	○	○	○	○	○	○	○
3. It is important for me to learn what the project work teaches me *	○	○	○	○	○	○	○
4. I like what I learn in the projects *	○	○	○	○	○	○	○

5. I´m certain I can understand the ideas related to the project work *	○	○	○	○	○	○	○
6. I think I will be able to use what I learn in this project in other projects *	○	○	○	○	○	○	○
7. I expect to do well in this study system *	○	○	○	○	○	○	○
8. Compared with the others in my class, I think I´m a good student *	○	○	○	○	○	○	○
9. I often choose topics where I will learn something from even if they require more work *	○	○	○	○	○	○	○
10. I am sure I can do an excellent job on the problems and tasks assigned for this project *	○	○	○	○	○	○	○
11. I think I will receive a good grade for this project *	○	○	○	○	○	○	○
12. Even when I do poorly during an assessment I try to learn from my mistakes *	○	○	○	○	○	○	○
13. I think that what I am learning in this class is useful for me to know *	○	○	○	○	○	○	○
14. My study skills are excellent compared to others in this class *	○	○	○	○	○	○	○
15. I think that what we are learning in this class is interesting *	○	○	○	○	○	○	○

16. Compared with other students in this class I think I know a great deal about the subject *	○	○	○	○	○	○	○
17. I know I will be able to learn the material for this project *	○	○	○	○	○	○	○
18. Understanding this topic is important to me *	○	○	○	○	○	○	○
19. When I prepare for an assessment, I try to put together information from the project and from other resources *	○	○	○	○	○	○	○
20. When I work on the project alone, I try to remember what the other project-members have told me *	○	○	○	○	○	○	○
21. I ask myself questions to make sure I know the material I have been studying *	○	○	○	○	○	○	○
22. It is hard for me to decide what the main ideas are in what I read *	○	○	○	○	○	○	○
23. When work is hard I either give up or study the easy parts *	○	○	○	○	○	○	○
24. When I study I put the important ideas into my own words *	○	○	○	○	○	○	○
25. I always try to understand what the others are saying even if it doesn´t make any sense *	○	○	○	○	○	○	○
26. When I prepare for an assessment I try to remember as many	○	○	○	○	○	○	○

facts as I can *							
27. When studying, I copy my notes over to help me remember material *	○	○	○	○	○	○	○
28. I work on practice exercises and prepare extra material even when I don´t have to *	○	○	○	○	○	○	○
29. Even when the materials for the project are dull and uninteresting, I keep working until I finish *	○	○	○	○	○	○	○
30. When I study for a presentation I practice saying the important facts over and over to myself *	○	○	○	○	○	○	○
31. Before I begin studying I think about the things I will need to do to learn *	○	○	○	○	○	○	○
32. I use what I have learned from old project assignments and the textbook to do new assignments *	○	○	○	○	○	○	○
33. I often find that I have been reading for a project-meeting but I don´t know what it is all about *	○	○	○	○	○	○	○
34. I find that when someone else is talking I think of other things and don´t really listen to what is being said *	○	○	○	○	○	○	○
35. When I am studying a topic, I try to make everything fit together *	○	○	○	○	○	○	○
36. When I am reading I stop once in a while	○	○	○	○	○	○	○

and go over what I have read *							
37. When I read materials for the project, I say words over and over to myself to help me remember *	○	○	○	○	○	○	○
38. I outline the chapters in my book to help me study *	○	○	○	○	○	○	○
39. I work hard to get a good grade even when I don´t like the project *	○	○	○	○	○	○	○
40. When reading I try to connect the things I am reading about with what I already know *	○	○	○	○	○	○	○

Thank you for your time and participation in the survey!

0% completed

Attachment 2. List of Abbreviations

ACT	American College Testing
CFA	Confirmatory Factor Analysis
d	Standardized Mean Difference
DA	Deep approach
DP	Degree Programme
EFA	Exploratory Factor Analysis
EME	l'Échelle de Motivation en Éducation (Measurement of Motivation towards Education)
EMPA	l'Échelle de Motivation pour les Personnes Ágées (Measure of Motivation for Persons of old Age)
GRE	Graduate Record Examination
HH UAS	HAAGA-HELIA University of Applied Sciences
IBL	Inquiry-based Learning
IMI	Intrinsic Motivation Inventory
M	Mean
MSLQ	Motivated Strategies for Learning Questionnaire
NSSE	National Survey of Student Engagement
PBL	Project-based Learning
PCDEQ	Psychological Characteristics of Developing Excellence Questionnaire
PCS	Perceived Competence Scale
PrBL	Problem-based Learning
R-SPQ-2F	Revised Study Process Questionnaire
SA	Surface approach
SAT	Scholastic Aptitude Test (only acronym in use in the present)
SD	Standard Deviation
SE	Student Engagement
SOLO	Structure of Observed Learning Outcome
SPQ	Study Process Questionnaire
SRQ-A	Self-regulation Questionnaire – Academic Context
SRQ-E	Self-regulation Questionnaire – Exercise Activity
SRQ-F	Self-regulation Questionnaire – Friendship
SRQ-L	Self-regulation Questionnaire – Learning Environment
SRQ-P	Self-regulation Questionnaire – Prosocial Environment
SRQ-R	Self-regulation Questionnaire – Religion
TSRQ	Self-regulation Questionnaire – Medical treatment Situation