STUDENTS' MOTIVATION AND
MOBILE LEARNING EXPERIENCES,
CASE LUAS

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ABSTRACT

The topic of this paper is students' motivation and mobile learning experiences. There is a lot of current interest to find an easy access into learning spaces for those students who have low motivation because of fear of failure and academic withdrawal. Mobile learning offers a readily available chance with a low threshold to view materials and to carry out mobile assignments. A previous Lahti University of Applied Sciences (LUAS) case study dealt with the results of an achievement goal orientation study combined with the results of mobile learning experiments. The aim of the present study was to examine how these same students experienced assignments done by using a smartphone. The sample consisted of those students of the second academic year (N=77) at the Faculty of Technology at Lahti University of Applied Sciences in Finland, who were willing to fill the poll questionnaire. According to this after-course questionnaire, students seemed to experience the compulsory mobile assignments positively. They seemed to think that mobile tasks were a refreshing change, as none of them had previous experience of doing assignments using a smartphone.

KEYWORDS

mobile assignment, m-questionnaire, motivation

INTRODUCTION

LUAS is a multidisciplinary higher education institution. In the years 2000 - 2013 the intake to the Information Technology and Media Technology programmes in the Faculty of Technology was 1593 students. Out of all these students, 419 had graduated, 744 dropped out and 430 students are still studying at the time of this research in November 2013. The dropouts of this context refer to students who have the marking of "resigned" in the student register.

The dropout full-time day students in the Information Technology programme had completed 49.7 credit units on average and been enrolled for 2.6 years on average. The corresponding figures among the mature students were 50.2 credit units and 3.0 years enrolled on average. The dropout full-time day students in the Media Technology programme had completed 47.1 credit units on average and been enrolled for 2.5 years on average. As the Bachelor of Engineering degree is 240 credit units, expected to be completed in four

years, these figures are harsh to read. The dropout students could not complete even 60 credits, which should be done in one year.

In general, teachers in the Department of Information Technology have noticed that there has been an increase in the number of students who lack studying motivation. It can be seen in a variety of ways, like for example students do not come into examinations, do not come to school, do not hand in essays etc. in time, do not value the engineering program, and sometimes in classroom situations the teacher's authority is at a very low level (Veijalainen et al., 2013). It is crucial to find learning spaces which could motivate and encourage students in their studies.

BACKGROUND

Professor Markku Niemivirta has developed an instrument for assessing achievement goal orientations (Niemivirta, 2002). By using this questionnaire instrument it was possible to assess the achievement goal orientation profiles of 173 students of the second academic year who participated in a course called "The Basics of Databases". A study was made (Asplund, 2014) to research how students in different goal orientation profiles managed with mobile assignments and to examine if any correlation could be found between the results of mobile assignments and course grade. The interesting result was that students with avoidance orientation profile seemed to benefit from mobile assignments. Also, regardless of the students' orientation profile, the grade from mobile assignments and grade from course examination had statistically significant correlation. This was especially interesting because the course examination was totally different from the mobile assignments.

The aim of the present study was to examine how these same students experienced assignments done by using a smartphone. It is important to know if we can bring learning closer and more accessible for students and thus support them in their studies.

Two different course implementations were studied; autumns 2011 and 2012. The course covers database planning with entity-relationship model, relational design, normalization, transaction theory and database language SQL. The course is held in the beginning of the second academic year, and gives 3 credits. In order to get the credits, students needed to pass both the course examination and complete 3 out of 6 sets of mobile assignments (m-questionnaires). There was no grade limit in the mobile assignments. The results from m-questionnaires made up 20% of the final course grade.

METHOD

The study was done by conducting a survey in the internet. Students filled the poll questionnaire in the autumns of 2011 and 2012, after they had finished the course in question.

Participants, context of the study and measures

At the beginning of the second academic year all students of Information Technology and Media Technology from the Faculty of Technology and ICT students from the Faculty of Business studies participate in a compulsory course called "The Basics of Databases". The total number of students attending this course was 178, of whom 5 dropped out in the middle of the course. The poll questionnaire was filled by 77 students (43.3%). So, the survey was not comprehensive because some students were reluctant to answer.

The poll questionnaire had 5 different themes (Table 1), which all comprised four items: (1) *TOP10 list,* focusing on how students experienced the TOP10 list which included the 10 students collecting the highest points; whether it was interesting to follow and had any impact on answering the next set of questions; (2) *answering the m-questionnaires*, focusing on students' actual attempt to answer the m-questionnaires; (3) *experiencing the m-questionnaires*, reflecting students' experience about the m-questionnaires; (4) *operating with the device*, assessing students' ability to use a smartphone and (5) *future*, which scans students' opinions about using mobile devices in studying in general and in the future. Students rated all items using a 7-point Likert-type scale ranging from 1 - "strongly disagree" to 7 - "strongly agree".

Table 1. Poll questions and themes.

Theme	Question	nbr
TOP10 list	I wanted to see my name in TOP10 list.	2
	I followed the TOP10 list with interest.	7
	Because the points collected from the m-questionnaires had an impact on the course evaluation, it was very important for me to find the correct answers.	12
	The points collected from the previous m-questionnaires had an impact on how much time I used on the next m-questions.	18
Answering the m-questionnaires	I would have wanted to see the correct answers immediately.	5
	Usually I answered the weekly m-questionnaires without any help of others.	6
	Usually I answered the weekly m-questionnaires in some other place than at home or in the classroom.	13
	I repeated the issues discussed in the classroom with the m-questionnaires.	19
Experiencing the m-questionnaires	The m-questionnaires should be voluntary.	4
	The weekly m-questionnaires seemed simple enough.	10
	The m-questionnaires helped to maintain interest on the subject matter.	15
	I found the m-questionnaires necessary.	17
Operating with the device	Multiple-choice m-questionnaires are, in my opinion, the best task form for smartphones.	1
	I was able to perceive clearly the answer options from smartphone screen.	9
	I would have preferred answering the m-questionnaires using the computer.	14
	Using a smartphone for answering the m-questionnaires was easy for me.	20
Future	It would support my studies, if part of the assignments could be done free from time and place.	3
	I believe that in five years using a smartphone or a tablet in studying will be a part of normal practice.	8
	I would like to use a smartphone or a tablet in my studies.	11
	More involving assignments, which could include, for example, a mobile phone camera or a navigation system, would inspire me to use a smartphone in studies.	16

Background variables

The data from background variables were saved into an IBM SPSS Statistics 20 file for statistical analysis of the students attending "The Basics of Databases": (1) *Achievement goal orientation profile* – the information about the student's achievement goal orientation profile (mastery-oriented, success-oriented, indifferent, avoidance-oriented, no profile); (2) *Gender* - whether the student was a man or a woman; (3) *Mature or full-time* - if she/he was a mature student or full-time day student; (4) *Degree programme* – student's degree programme, whether it was IT (Information Technology), MT (Media Technology) or ICT

(Business Information Technology at the Faculty of Business Studies); (5) *Whose mobile phone* - if the smartphone used was the student's own or owned by the Faculty of Technology; (7) *Number of answered m-questionnaires;* (8) *Grade from m-questionnaires* - the grade which the student got from mobile questionnaires, (9) *Grade from course examination* and (10) *Answered the poll* – whether the student attending the course answered to this poll.

DATA ANALYSIS AND RESULTS

The group of those students who answered the poll represents quite well the total number of students attending "The Basics of Databases" course (N=173) (see Figure 1). The biggest differences between these two groups of students can be seen in among different orientation profiles. Students with no orientation profile, indifferent students and mastery-oriented students were more eager to answer than success-oriented and avoidance-oriented students. Also, it seems that women were generally more willing to answer the poll than men.
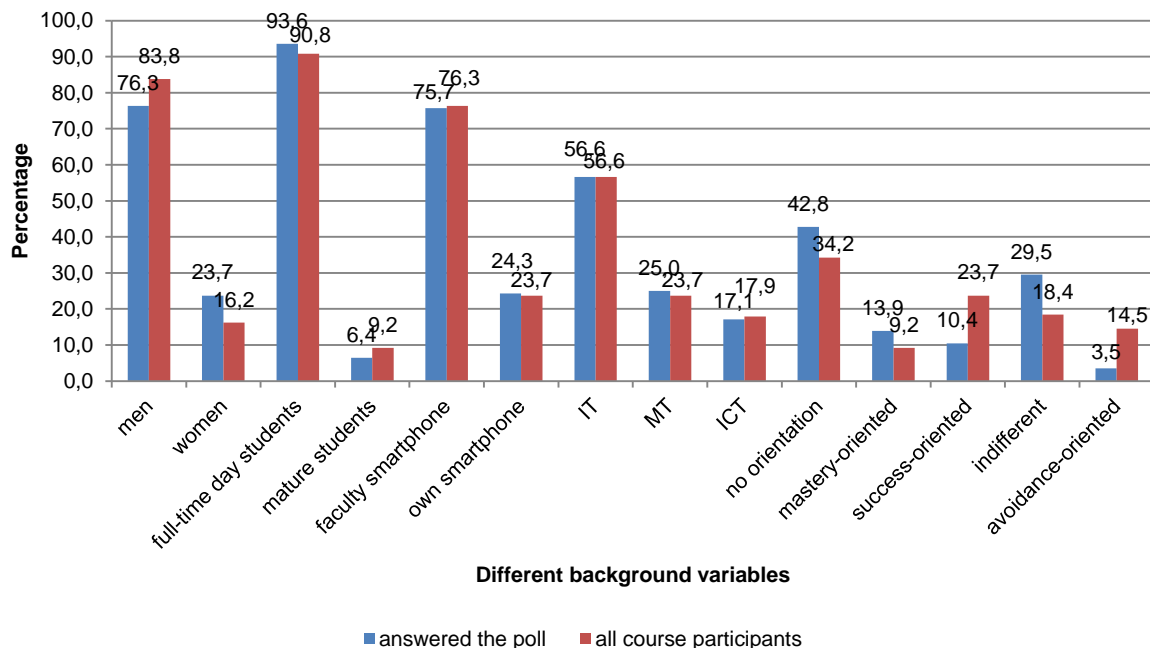

Figure 1. Graph about two groups of students: (1) Those who answered the questionnaire poll about experiencing mobile assignments and (2) all "The Basics of Databases" course participants.

The answers to the poll questionnaire were also saved into an IBM SPSS Statistics 20 (SPSS, 2010) file for statistical analysis. A One-way ANOVA test was run in order to see if there was any significant difference between different degree programmes (MT, IT, ICT) within different themes (Table 2). The dependent variable was themes and the independent variable was degree programme, which had three groups (MT, IT, ICT). One-way ANOVA is the result of Levene's F-test (Levene's test; Metsämuuronen, 2006). It only shows that there was significant (Sig. < .05) difference between degree programmes (MT, IT, ICT), but did not tell between which degree programmes. By running the Bonferroni test for non-significant results (Moore & McCabe, 1999; Bonferroni correction) and Tamhane's T2 test for significant

results (GLM Post Hoc Comparisons), the result was that ICT students had experienced the TOP10 list theme differently from other students. Other themes showed no differences.

Table 2. One-way ANOVA test between different degree programmes.

Theme	Sig.
TOP10 list	.004**
Answering the m-questions	.218
Experiencing the m-questions	.147
Operating with the device	.232
Future	.115

Note. *p < .05, **p < .01

Students seemed to consider mobile assignments to be necessary for them (Figure 2). Regardless of the orientation profile, students have thought that this kind of assignments can benefit them somehow.
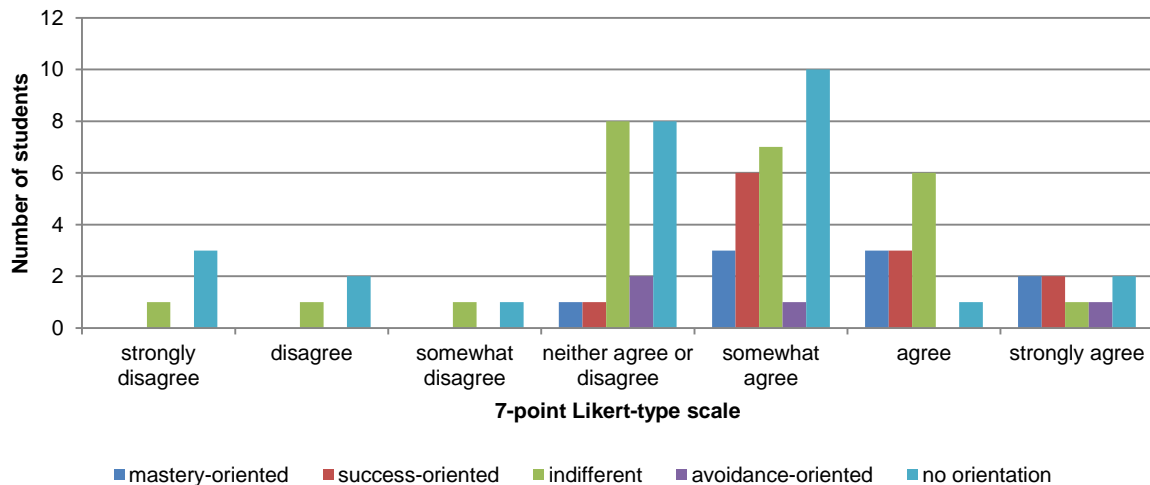
Figure 2. Poll answers to the question "I found the m-questionnaires necessary" in different achievement goal orientation profiles.

Students thought that assignments done by smartphone helped them to keep interest on the subject matter (Figure 3). They also thought that in five years these kinds of assignments, which are made with a smartphone or tablet, will be a part of normal practice in studying (Figure 4).
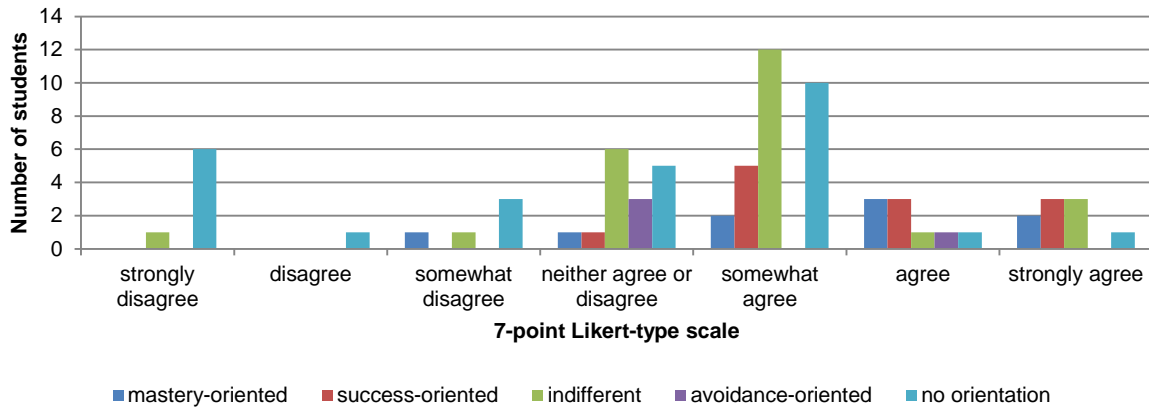
Figure 3. Poll answers to the question "The m-questionnaires helped to maintain interest on the subject matter" in different achievement goal orientation profiles.
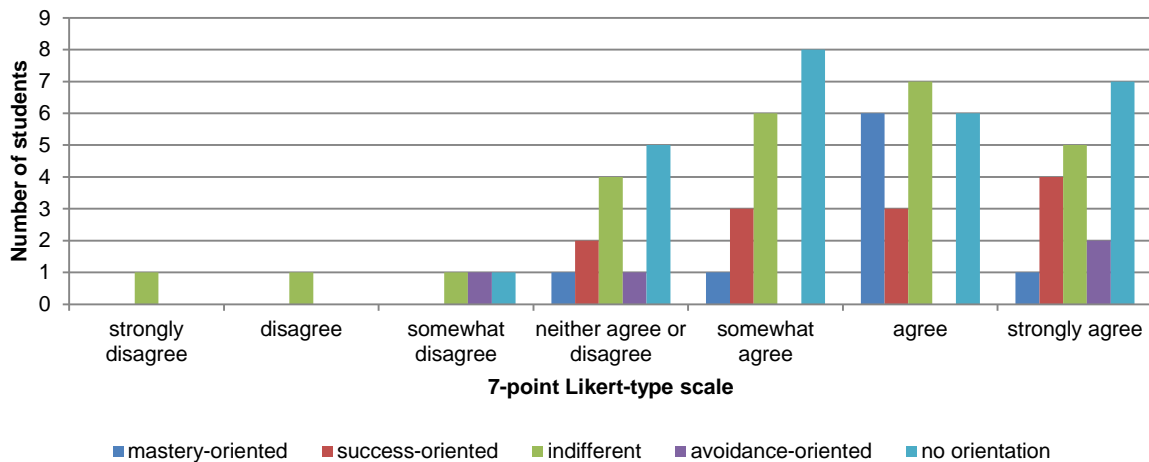

Figure 4. Poll answers to the question "I believe that in five years using a smartphone or a tablet in studying is a part of normal practice" in different achievement goal orientation profiles.

Answers of the theme questions

All the five themes included four questions. The *TOP10 list* theme questions were about experiencing the TOP10 list and about the points students collected. Opinions were generally on the positive side. 24% percent of students really wanted to see their names in the TOP10 list. Following the TOP10 list seemed to be equally interesting and not interesting. Most students felt that because m-questionnaires had an impact on the course evaluation, it was important to invest in them. However, the time used to solving the m-questionnaires did not depend on the total amount of points collected.

Answering the m-questionnaires theme focused on the actual doing of them. As the technique used for m-questionnaires was Google Forms, if was not possible to give feedback about answers immediately after submitting the form. Students had to wait for the lecturer to calculate the points manually. Direct feedback was wished, but seemed not to be highly critical as "only" 28.0% of the students strongly agreed on the importance of seeing the

answers immediately. 64.0% worked independently when answering, as only 4% of students admitted to using more help of others than their own reasoning. 61.3% of students answered the m-questionnaires in the classroom or at home. 76.2% of students used their own smartphone and 23.8% used the one the Faculty offered. Despite the fact that about 3/4 of students had an opportunity to answer the m-questionnaires wherever they wanted to, classroom or home seemed to be the best place for it. The repetition aspect of the issues of m-questionnaires was also on the positive side of scale.

Experiencing the m-questionnaires theme was about the general feeling towards mobile assignments. Surprisingly, the students seemed to like the compulsory nature of m-questionnaires, as there were more students on the disagreeing side (total of 41.3%) of the "The m-questionnaires should be voluntary" claim than agreeing side. 28.0% did not know if it was good or bad. The difficulty level of the content of the m-questionnaires apparently offered some challenge, as 29.3% disagreed somewhat and 30.0% neither agreed nor disagreed on them being simple enough. At least some students thought that m-questionnaires were helpful in maintaining interest as 36.5% agreed somewhat on that. The curve of claim "I found the m-questionnaires necessary" follows the previous. 1/3 of the students found the m-questionnaires necessary.

Operating with the device theme focused on students' ability and willingness to use a smartphone for answering. A mutual agreement on all the theme questions could be seen (Figure 5). 44.0% of students strongly agreed on the fact that multiple-choice questions were suitable for smartphone use. There was no need to either write anything or read long text files. 80% agreed positively that they could read the m-questionnaires from the device clearly. It was surprising that using a smartphone did not cause any trouble, but still a total of 62.7% agreed positively that they had preferred a computer instead of a smartphone for answering. Only total of 21.3% thought that using a smartphone was not so easy.
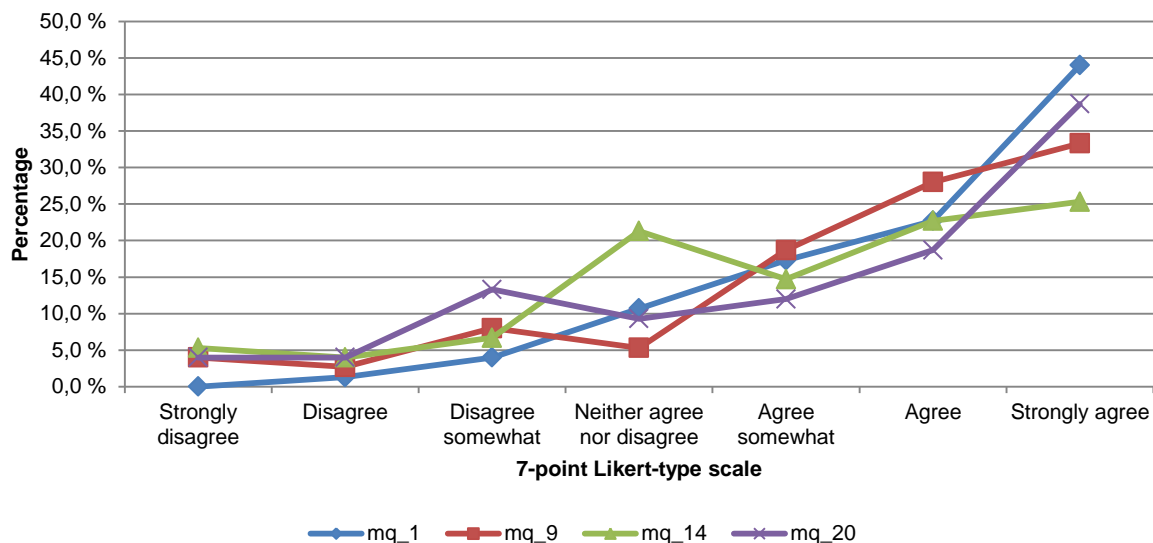

Figure 5. Percentages of poll theme "Operating with the device".

The theme *future* summarized questions about using mobile devices in studying in near future (Figure 6). Students tend to think that it would be nice if some assignments could be free from time and place. Total of 3/4 of them (76.0%) also positively agreed on the belief that a smartphone or a tablet will be one of the basic devices used in studies in the near

future. Still, they seemed to be a little bit reluctant to move in that direction, as opinions are uniformly distributed on agreement and disagreement over the question "I would like to use a smartphone or a tablet in my studies". To support that one, students did not agree on more involving assignments.
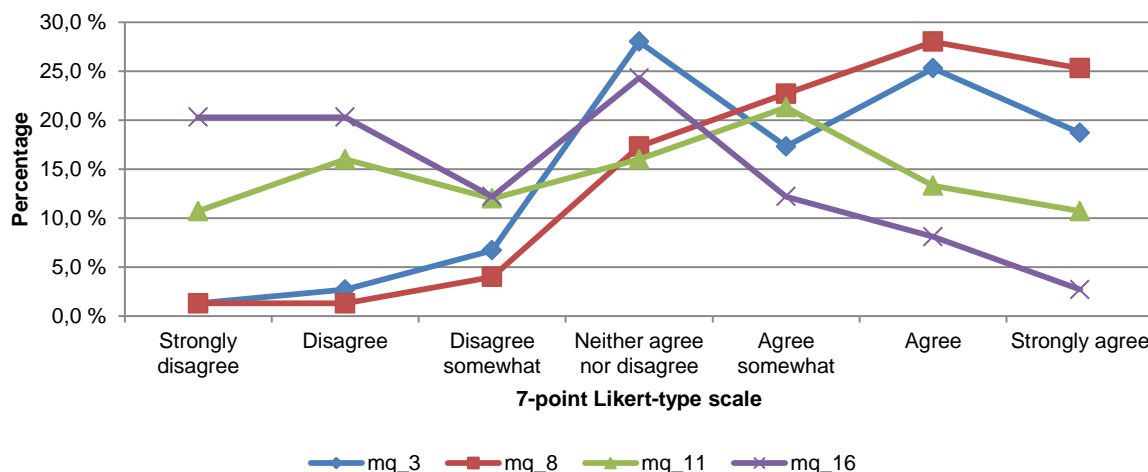

Figure 6. Percentages of poll theme "Future".

Free feedback from the students

The last part of this questionnaire poll study was a possibility to give whatever feedback the students wanted to concerning mobile tasks. The feedback seemed to be divided into three different categories: for mobile tasks, against mobile tasks and neutral.

Some students thought that using a smartphone was an interesting and refreshing idea. They also thought that m-questionnaires were nice, but needed a little bit further development.

> "I think mobile assignments were a nice change, and they were easy to do for example in a bus or train."

> "These mobile assignments were a nice innovation. A computer would have been a better choice for these assignments. The idea to use a mobile phone in studies is worth developing further."

Some students in turn thought that because everybody does not have a smartphone, these kinds of tasks are not preferable. One student thought that mobile tasks were easy to forget, among all the other "stuff" a mobile phone contains.

> "I experienced mobile assignments a little bit troublesome because I don't own a smartphone (YES, I'm so old-fashioned). If it had also been possible to answer with a desktop computer, the assignments would have been nicer."

> "Mobile assignments sucked, because they came into a smartphone and were forgotten immediately. I didn't want to answer right after the lectures and after one week the whole

thing was forgotten. The smartphone is used more and more as a calendar and for emailing but it's no good for assignments."

CONCLUSION

It is a very personal matter how people experience smartphones and their use. Not everybody has a smartphone, so if mobile assignments are used in studying, the Faculty should provide devices. In spite of the fact that 23.8% used a smartphone owned by the Faculty, students experienced the compulsory tasks positively, which was surprising. Overall, mobile tasks were a refreshing change or unnecessary compulsion, depending on the point of view.

The students of the Faculty of Business Studies in the degree programme of Information Technology experienced the TOP10 list theme differently from the Information Technology and Media Technology students of the Faculty of Technology. They were more positive on every aspect relating the TOP10 list theme. It is unclear what causes this difference between Faculties.

Because the mobile tasks had an impact on the course evaluation, students wanted to invest in them. They usually answered the m-questionnaires at home or in classroom, and did the answering alone without any help of others. The m-questionnaires seemed to be somewhat difficult, which might have been one reason to why the student did not use the total freedom of time and place. They probably used supportive material when answering. The other reason might be that the students had never done mobile tasks before, so the whole concept was unfamiliar.

Students thought that the use of smartphones was not difficult at all, but still some of them had wanted to do the mobile tasks with computer. The mobile tasks were in the form of multiple-choice questions, i.e. check-box and radio button choices. This seemed to be a nice selection for the task type. The problem was the implementation with Google Forms, which did not offer the possibility to give instant feedback about the performance. If mobile tasks are intended to be used in the future, proper tools and applications must be available. Students had a strong belief that in the near future the number of mobile tasks will increase. We must prepare ourselves to meet the entailing pedagogical and technical challenges.

The results of the previous case study (Asplund, 2014) and this case study suggest that mobile assignments could offer a useful tool to encourage students to study, especially those with motivational challenges.

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