How do frequent deadlines influence learning outcomes in blended learning in higher education.

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Date: 7-6-2019

Abstract

In blended learning self-regulated learning skills are considered important because of individual work online. A critical part of self-regulated learning is organizing learning by distribution of learning activities. In this study the effects of weekly deadlines in a blended learning environment on self-regulated learning, learning outcomes and distribution of learning activities are examined. This study was conducted at University of Applied Sciences Utrecht. The participants were students in teacher education learning to become English teachers. A quasi-experimental design was used with a control group that had end of term deadlines and an experimental group with weekly deadlines. This study determined what the influence of frequent deadlines is on the learning outcomes of students by measuring results. Additionally, distribution of learning activities has been measured to see whether frequent deadlines will result in better distribution of learning activities and more time on task. Self-regulated learning skills were measured using a modified version of the Motivated strategies for learning questionnaire. There was a negative effect of frequent deadlines on academic cognition and no effect on academic motivation and academic behavior. No effect of frequent deadlines was found on learning outcomes and distribution of learning activities. No significant differences for sex were found.

Keywords: self-regulated learning, learning outcomes, motivation, blended learning, frequent deadlines, distribution of learning activities.

Introduction

Due to the increased usage of internet blended learning is becoming more prevalent and relevant (Spanjers, Könings, Leppink & Van Merriënboer, 2014). In blended learning self-regulated learning skills are very important (Sletten, 2017; Mc Donald, 2014; Vlach & Sandhofer, 2012). Self-regulated learning skills correlate negatively with procrastination, low confidence and anxiety (Senécal, koestner & Vallerand, 1995). A way of helping students improve their learning is by distributing learning activities (Spanjers, Könings, Leppink, Verstegen, Czabanowksa & van Merrienboer, 2015). This helps students improving planning, helping them in self-regulated learning.

The theoretical relevance of this study is to find out whether frequent deadlines will help students distribute learning activities in blended learning. Literature suggests that quizzes positively affect attractiveness and effectiveness of blended learning (Spanjers et al., 2015) and lead to better learning outcomes (Dirkx, Kester, & Kirschner, 2014). Frequent quizzing activities can support or stimulate students to distribute their learning activities. Students have great difficulty in setting their own deadlines and often time this improperly, a course with instructor set deadlines often leads to higher grades (Fulton, Ivantiskaya, Bastian, Erofeev & Mendez, 2013).

The practical relevance of the study is the possibility of improving student learning by designing better blended learning environments that facilitate or force students to distribute their

learning activities. If student self-regulating skills improve due to frequent deadlines this is in their own interest, because in professional life it is expected that new employees that finished higher education are proficient in self-regulating skills (Newman, Deyoe, Connor & Lamendola, 2015).

The aim of this research is to investigate whether frequent deadlines lead to better learning outcomes. The premise of this statement lies in the effect of distribution of learning activities over time. It is interesting to study the effects on self-regulated learning, motivation and learning outcomes in a blended learning environment. If students distribute learning activities more it is also relevant to analyze their perception on their own self-regulated learning.

Blended Learning

Blended learning is a combination of face-to-face and online learning (Boelens, Van Laer, De Wever & Elen, 2015; Spanjers et al., 2015). Combining both forms it is expected to lead to better education (Spanjers et al., 2015). Practical considerations and resource management are reasons for implementation of blended learning. On average blended learning will lead to slightly better results (Spanjers et al., 2015). Students perceive blended learning and traditional learning equally attractive, though they found blended learning more demanding concerning time and effort (Spanjers et al., 2015).

Self-regulated learning

In blended learning the following skills for self-regulated learning are required: organisation, discipline, time-management, use of technology and self-efficacy over learning process (Mc Donald, 2014). Self-regulated learning is defined as being able to apply metacognitive, behavioural and motivational strategies to independently and proactively achieve certain goals (Zimmerman, 1990). Because this definition is often used in educational research it will also be used in this study. Students that score high in self-regulated learning do better academically than students that score low in self-regulated learning skills (Roth, Ogrin & Schmitz, 2015). Self-regulated learning also correlates negatively with procrastination, low confidence and anxiety (Senécal, Koestner & Vallarand, 1995). Students that score high in procrastination, low confidence and anxiety have a hard time to obtain their focus, planning and are less aware of the time a learning task will take (Jeffrey, Milne, Suddaby & Higgins, 2012). Students that have self-regulation skills are also better in critical thinking skills than students that procrastinate. On the other hand, students that procrastinate learn more superficial than students who are proficient in self-regulated learning. An explanation for this occurrence is, students that plan their work, give themselves the opportunity to store the information in their long-term memory (Mayer & Chandler, 2001). There seem to be differences in self-regulation between different groups. Research found there are differences in self-regulation between boys and girls in secondary education (Peklaj and Pečjak, 2002; Martin, 2004). Girls use more metacognitive strategies and have more self-regulatory behavior to monitor their efforts. In addition, they found that girls are more intrinsically motivated.

Students need these skills in blended learning specifically because online they work independently. Because of flexibility in time and place in online learning there is a bigger physical and psychological distance for communication, called transactional distance (Moore, 1993). As this distance grows interaction becomes more difficult. Bigger transactional distance makes it harder for the teacher to know what a student does and does not understand (Boelens, De Wever & Voet, 2017).

Distribution of learning activities

Several different terms are used to operationalize distribution of learning activities: spaced learning, distributed learning over time and distributed practice. In this study distribution of learning activities is used for those terms. Distribution of learning activities is a learning strategy where learning events are broken up into short sessions and over a longer period with intervals of time between learning events (Vlach & Sandhofer, 2012). Time is crucial in learning, without putting time into a task no progress can be achieved. Nevertheless, students often do not organize their learning time in an efficient way, they procrastinate, waste time, try doing too much or underestimate the time needed for completing tasks (Xu, 2013; Nawrot & Doucet, 2014). Less distributed learning activities have a negative effect on students understanding of subject matter (Budé, Imbos, Van de Wiel & Berger, 2011). Cognitive and neuroscientific research indicates that distribution of learning activities leads to longer lasting memories and better learning than more massed practice. This spacing effect of distributing learning activities works for both simple and complex concepts (Vlach & Sandhofer, 2012)

A way to force distributed learning activities is by setting frequent deadlines. Students have great difficulty in setting their own deadlines. A course with instructor set deadlines will lead to higher grades (Fulton et al., 2013). Ariely & Wertenboch (2002) state that student results are best with externally set deadlines, this group was followed by the group with self-set deadlines and the least performing group only had an end of term deadline. External regulation of spaced learning leads to better results over self-regulation (Fulton et al., 2013; Azevedo, Moos, Greene, Winters & Cromley, 2008). However intrinsic motivation decreases when deadlines are set externally (Amible, De Jong & Lepper, 1976). According to Self-determination theory of Deci & Ryan (1987) the decrease is explained because of lower perceived autonomy. An important finding in more recent research on deadlines is that groups with weekly deadlines and end of semester deadlines had the same levels of perceived autonomy (Fulton et al., 2013). Moreover research by Fulton et al (2013) states that frequent deadlines enhanced distribution of learning activities. Locus of control is a predictor of success in this case. Their first hypothesis is confirmed that groups with frequent deadlines, students with less control over learning, will space their study episodes to a greater extent than students that decide their own deadlines that have more control over pace (Fulton et al., 2013). Massing practice leaves no time separating study episodes by some amount of time (Fulton et al., 2013). Another reason to implement deadlines is to prevent planning fallacy (Fulton et al., 2013). Learners prefer massing their learning

over spacing it (Kornell & Bjork, 2008) even after receiving the information and feedback that shows their performance is being hindered by massed practice (Fulton et al., 2013).

Procrastinators rationalize their postponement behavior, for instance by claiming they perform better under pressure. They even postpone if they know they will fail. Inability to self-regulate performance speed and accuracy if they must work under high pressure of high cognitive tasks within limited timeframe lowers learning outcomes (Tuckman, 2005). With frequent tests academic performance of procrastinators improved more than regular homework assignments (Tuckman, 1997) their grades moved from lowest in the class to the top.

In MOOC's dropout rates are very high at around 90 percent (Yang, Sinha, Adamson & Rosé, 2013). This is partly because students do not face any consequences if they fail the course. Time-management is given as the main reason for low success (Nawrot & Doucet, 2014). Combining no consequences and time management are a good reason for setting harder deadlines in online learning.

One way of overcoming transactional distance is by online quizzing. Quizzing helps students space their learning activities. Testing effects appear because of frequent retrieval of information from memory (Jia, Chen, Ding & Ruan, 2012). In research on remembering words Jia et al. (2012) found that repeating retrieval made the memory of the words stronger and easier to retrieve from long term memory. There is no cognitive overload in the working memory and information can be stored in the long-term memory, implying that dividing up information and working on it more frequently will increase retention. Remembering words is not generalizable to more complex tasks though memory also plays a role there. Tests enhance retention even more than re-studying of material even when no feedback is given (Roediger & Karpicke, 2006). The benefits of distributed learning activities can be achieved by working on learning activities regularly. By testing regularly students can be motivated or forced to distribute their learning activities and not do everything in one go, which can have the side effect of students spending more time on learning activities (Roediger & Butler, 2011, Spanjers et al., 2014)

Another benefit of regular quizzing can be that when students are better prepared for face-to-face meetings since they had to learn more regularly (Bartini, 2008) Frequent testing also improves the effect of feedback, by giving the information of correctness of answers. In an electronic learning environment, the teacher also sees what precisely the students run into. Students have better insights into their progress in learning through frequent quizzes (Roediger & Butler, 2011). They often overestimate how well they perform. You can reduce self-overestimation with quizzes and feedback. Teachers will also find out where students spend more or less time on. Online, teachers can monitor which components need more attention or components students have mastered. This allows students to better determine how to best divide their time. This is a support for regulating learning and ensuring that they find out what the correct answers are (Spanjers et al., 2014). Spanjers et al (2015) conclude in their meta-analysis that learning outcomes and attractiveness of blended learning can be improved by frequent quizzing.

This study aims at filling a research void. Research has been done on the relationship between deadlines, learning outcomes and distribution of learning activities (Fulton et al., 2013). Also between distribution of learning activities, self -regulated learning and learning outcomes (Spanjers et al., 2015). This study combines frequent deadlines the effect on distribution of learning activities, learning outcomes and self-regulated learning. Combining the theory of distribution of learning activities and frequent deadlines the following research questions arise.

Research question

The research question for this study is: 'What is the effect of frequent deadline on learning outcomes in blended learning in higher education'. The following sub-questions arise from this research question.

1. What is the effect of frequent deadlines on academic motivation?
2. What is the effect of frequent deadlines on academic cognition
3. What is the effect of frequent deadlines on academic behavior?
4. What is the effect of frequent deadlines on distribution of learning activities by students?
5. What is the effect of frequent deadlines on learning outcomes?
6. Is there a difference in the effect of frequent deadlines between sexes?

Method

Research Design

To answer the research questions a quasi-experimental quantitative research with an experimental and control condition was conducted at University of Applied sciences Utrecht

The independent variable is the use of frequent deadlines or an end of course deadline. The dependent variables are: learning outcomes, distribution of learning activities and self-regulated learning skills. The difference in this design compared to typical distributed practice experiments the difference between small tasks and bigger assignments. Most laboratory experiments use simple and short tasks that can be practiced repeatedly (Fulton et al., 2013). Continuous practice of a complex task is also done in research where learners build skills through trial and error. However, few laboratory experiments chunk content.

Control condition. Learning goals of the course are the same in both conditions (appendix A). The assignments completed by students also had to meet the same requirements (appendix B, C). Students were enrolled in the learning management system (LMS) of 'Eduseries' for the course 'beroep 4' (5 ECTS). Both courses were given in a Blended form combining seven face-to-face meetings three hours each and online preparation. The additions to the course are online quizzes and knowledge clips. The online quizzes were knowledge-based questions on theory given during the course. In the face-to-face meetings literature is discussed and there is room for in class assignments.

The students had to create a skills-portfolio, persuasive paper and complete online quizzes. The deadline for the skills-portfolio and paper assignment are in week 8. The online quizzes were weekly and had to be finished before the end of term. The students in the control condition had the option in week 5 to hand in a draft version of the paper assignment.

Experimental condition. The experimental condition had weekly deadlines for the skills portfolio. Every week they had to hand in an assignment. For every deadline a notification was sent to the student. The content of the weekly deadlines can be found in appendix B. Week 2 students had to hand in assignment 1 of the skills portfolio, week 3 assignment 2, week 4 assignment 3, week 5 presenting assignment 3, handing in a draft version of the paper assignment and handing in step 1 of assignment 4, week 6 handing in step 2 of assignment 4, week 7 handing in step 3 of assignment 4, week 8 handing in step 4 of assignment 4.

Participants

The participants were students in teacher education learning, at University of Applied Sciences Utrecht. The participants study to bevome English language teachers on high schools. These students were enrolled in the course 'Beroep 4' 2018-2019. Four groups were divided over the conditions. Two groups were assigned to be in the experimental group and the other two to the control group. These groups were formed alphabetically on surnames. 'Beroep 4' takes place in the third period of year two. The sampling method used in this study is convenience sampling. Students received an oral explanation and a notification for participating in this study. Students completed consent forms (Appendix D).

Table 1.

Participants students from University of Applied Sciences Utrecht in teacher education.

Characteristic	Category	Experimental (*n* = 36)	Control (*n* = 38)	Total (*n* = 74)	%
Gender	Male	12	15	27	36.5
	Female	24	23	47	63.5
Agreed to participate	Yes	35	36	71	95.9
	No	1	2	3	4.1
Dropout	Yes	16	22	38	51.4
	No	20	16	36	48.6

Data was excluded list wise. Due to few respondents without missing data excluding data case-wise was suboptimal. Incomplete data led to different frequencies of students for different research questions. Dropout criterion was whether students handed in their paper assignment

Instrumentation

  Learning outcomes. To determine learning outcomes three measures are considered. The paper assignment was graded 1-10 (appendix C). The second measure of learning outcomes were the online quizzes. The quizzes were closed questions that would be scored 1-10 if the question was answered correctly and 0 if it was answered incorrectly.

  Self-regulated Learning. Self-regulating learning of students was assessed using the modified Motivated Strategies for Learning Questionnaire (MSLQ) one version for the pre-test and one for the post-test (Appendix E, F) (Wolters, Pintrich & Karabenick, 2005; Sletten, 2017). The translation used is based on an earlier Dutch translation (T. Riemers, 2018). The difference in this study was that questions were not specifically aimed at video-lectures. The questionnaire is designed so it can be used in its entirety or parts depending on the research (Roth et al., 2015). The questionnaire measures through self-report. It is a validated questionnaire which has been used in several studies ($α = .52$-$.93$; Roth et al., 2015). The questionnaire consists of three components (academic cognition, academic motivation, academic behavior) that are divided into 15 subscales (Roth et al., 2015) using a 7-point Likert scale (1 = "not at all true of me" to 7 = "very true of me"). The dimensions 'Academic cognition' (example item: Als het cursusmateriaal te moeilijk is, pas ik mijn manier van studeren aan zodat ik de stof beter begrijp.), 'Academic motivation' and 'Academic behaviour' were used in this study. These dimensions consist of the subscales: Rehearsal strategies, elaboration strategies, organization strategies and Metacognitive self-regulation (Academic cognition); Mastery self-talk, relevance enhancement, situational interest enhancement, performance/ extrinsic self-talk, self-consequating, environmental structuring (Academic motivation); Effort regulation, regulating time and study environment, help seeking (Academic behavior).

  Reliability of the modified MSLQ is determined by the Cronbach's alpha: Pre-test $α = .92$, Post-test $α = .91$ and Pre-post-test combined: $α = .95$. For the underlying dimensions: Academic cognition $α = .87$, Academic motivation $α = .95$ and Academic behavior $α = .74$. Based on COTAN criteria this is sufficient for research purposes (Evers, Lucassen, Meijer & Sijtsma, 2009)

  Distribution of learning activities. In appendix D questions are listed where students can enter how much time they spent per weekday on the course 'Beroep 4'. Time spent learning was measured in hours and minutes per day of the week. Students had to answer these questions weekly.

Procedure

To answer the research questions data is gathered through learning outcomes and surveys. Four workgroups of students from University of Applied Sciences Utrecht were informed about this study during class and again online. Students were informed data was treated anonymously and confidentially.

  Intervention. The participants were divided among 4 groups in which they attended classes.

Two of these groups were assigned the experimental ($n = 36$) condition and two were assigned the control condition ($n = 38$), in consultation with the instructors of the course. The experimental course had weekly deadlines for assignments of the skills portfolio. Both the experimental group and control group had online quizzes linked to the knowledge clips and for both groups the deadlines of the paper assignment were the same. For the control group the deadline for the skills portfolio was at the end of the course. Both groups were asked weekly to fill in home much time they spent studying and which days of the week.

The self-regulated learning surveys were handed out in week one and seven of the course. In the weeks prior to the course teachers of the course were informed by the researcher on how the questionnaires were taken. The questionnaires on distribution of learning activities were taken every week in class online.

Data analysis

In this research the independent variable is whether the students had weekly deadlines or not. The dependent variables were learning outcomes, self-regulated learning skills and distribution of learning activities. Learning outcomes in control group and experimental group were compared. For the grade on the paper assignment, online quizzes and total time spent learning an independent sample t-tests were conducted. Self-regulated learning skills are measured through a pre-posttest score of the questionnaire for self-regulated learning skills (Appendix E, F). Pre and- post-test scores were compared ANCOVA. The pre-test being the covariate. For learning outcomes independent t-tests were conducted. Distribution of learning activities is visually represented, and an independent t-test were conducted. To compare the differences between sexes for learning outcomes and distribution of learning 2-way ANOVA has been conducted. For pre-test post-test differences between sexes a 2-way ANCOVA has been conducted.

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Results

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Before analyzing the results, a check has been done on the whether the data complied with the assumptions for the analysis within this study. Dropout rate in the experimental group was 44 % and of the control group 57% with respect to not handing in the paper assignment. The paper assignment was the only assignment being graded and used as drop-out criterion. On average 3.7 out of the 7 deadlines were met by students in the experimental group.

Three ANCOVA's were used to compare pre and post-test of self-regulated learning skills between the experimental and control group: for academic cognition, academic motivation and academic behavior. For all three cases the covariate was the pre-test.

Academic Cognition differed between both groups. The experimental group showed ($M =$ 59.28, $SD = 12.8$) and the control group ($M = 66.00$, $SD = 12.8$). With pre-test being a covariate, the difference was significant ($p = .016$) with the experimental group doing worse.

There was no significant difference in Academic Motivation between the experimental group (*M* = 107.83, *SD* = 14.66) and the control group (*M* = 108.20, *SD* = 25.37).

There was no significant difference in Academic behavior between means on the post-test, experimental group (*M* = 57.71, *SD* = 6.02) and the control group (*M* = 52.75, *SD* = 5.53).

To analyze the variables of learning outcomes, a MANOVA was intended, but the assumption of normality was not met. That is why independent t-tests were conducted.

For distribution of learning activities, a visual representation is given of the weekdays and weeks. An independent samples t-test compared average learning time per week between experimental (*M* = 6.13 , *SD* = 2.47, *n* = 19) and control group (*M* = 4.82 , *SD* = 2.11, *n* = 16).

To compare the differences between sexes for learning outcomes and distribution of learning 2-way ANOVA has been conducted. For pre-test post-test differences between sexes a 2-way ANCOVA has been conducted.

1. What is the effect of frequent deadlines on academic cognition?

Examination of histograms, the Shapiro Wilk test for control and experimental group indicated that the assumption of normality was met for Academic cognition. Scatterplots indicated a linear relation between covariate and dependent variable. The assumption of homogeneity of variance and regression slopes is supported because there is no significant IV covariate interaction. $F (1, 34) = 0.03$, *p*= .854. The Levene's test was not significant $F (1,36) = .014$ *p* = .905. The ANCOVA shows a significant effect of deadlines on academic cognition $F (1,35) = 6.45$, *p*=.016, partial η^2 =.156. Analyzing the pairwise comparisons: the experimental group scored lower academic cognition scores at the end of the course. In contrast to what was predicted the control group scored better.

2. What is the effect of frequent deadlines on academic motivation?

Examination of the histograms, the Shapiro Wilk test for control and experimental group indicated that the assumption of normality was met for Academic cognition. Scatterplots indicated a linear relation between covariate and dependent variable. The assumption of homogeneity of variance and regression slopes is supported because there is no significant IV covariate interaction. $F (1, 34) = 3.44$, *p*= .073. The Levene's test was not significant $F (1, 36) = .005$, *p* = .941. The ANCOVA showed no effect of deadlines on academic motivation $F (1,35) = 2.32$, *p*=.137, partial η^2 =.062.

3. What is the effect of frequent deadlines on academic behavior?

Examination of the histograms, the Shapiro Wilk test for control and experimental group indicated that the assumption of normality was met for Academic cognition. Scatterplots indicated a linear relation between covariate and dependent variable. The assumption of homogeneity of variance and regression slopes is supported because there is no significant IV covariate interaction. $F (1, 33) = .008$, *p*= .930.

The Levene's test was not significant $F(1,35) = .560$ $p = .459$. The ANCOVA showed no effect of deadlines on academic behavior $F(1,34) = 3.43$, $p = .073$, partial $\eta^2 = .092$.

4. What is the effect of frequent deadlines on distribution of learning activities by students

Distribution of learning is shown in Figure 1,2 and 3. Figure 1 shows that at the day of class being Monday most of the work is done and Sunday comes second to learning time. No effect can be seen of the notifications students received every Thursday. The rest of the distribution of learning within a week is also shown in Figure 1.
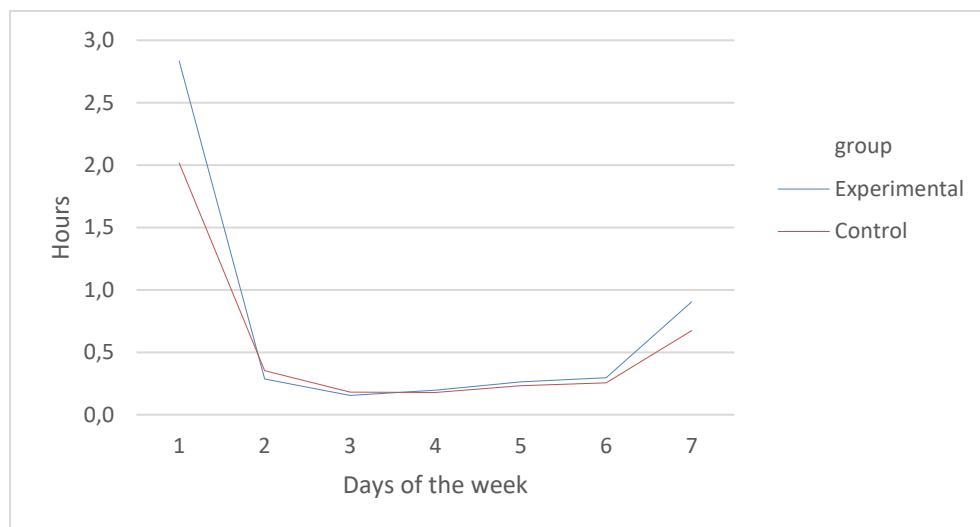

Figure 1. Daily average in hours learning per weekday for experimental and control group.

The holiday week was excluded in Figure 2 since student had no class that week. It was shown that from the start of the course until week 6 the experimental group spends more time studying. In week 7 at the end of term it is shown students in the control group spent more time learning. An independent samples t-test compared average learning time per week between experimental ($M = 6.13$, $SD = 2.47$, $n = 19$) and control group ($M = 4.82$, $SD = 2.11$, $n = 16$). The t-test showed no significant results $t(33) = 1.67$, $p = .104$, two-tailed. No significant result is found. Mean difference is 1.3 hours per week.
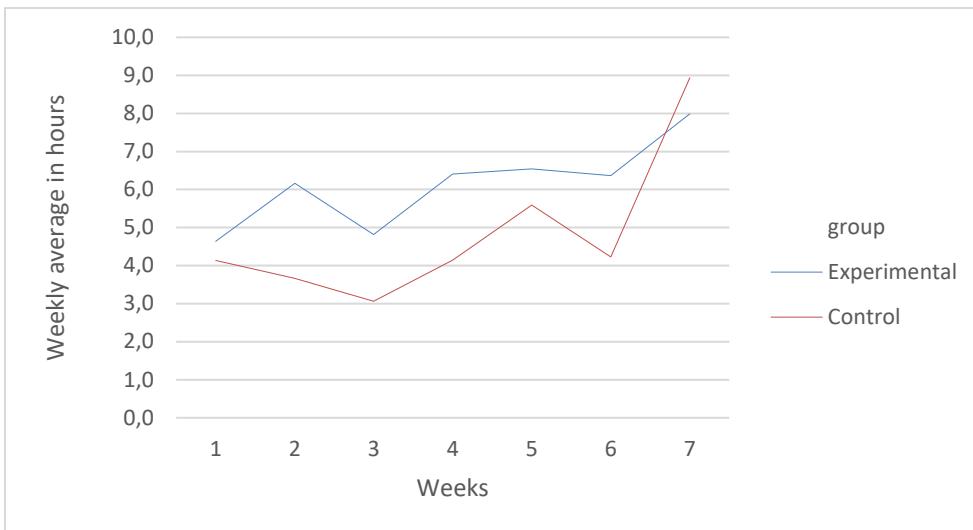
Figure 2. Weekly average of hours learning each week for experimental and control group.

5. What is the effect of frequent deadlines on learning outcomes?

To be able to determine the effect on learning outcomes three measures are analyzed: grade on paper and scores on online quizzes.

An independent samples t-test compared the grades of the paper assignments between the experimental (*M* = 6.15 , *SD* = 1.40, *n* = 20) and control group (*M* = 5.67, *SD* = 1.14, *n* = 16). Shapiro-Wilk test was significant for the control group. Analyzing histograms normality is assumed. The t-test was non-significant *t* (34) = 1.11, *p* = .275, two-tailed. No effect of weekly deadlines grade on paper is found.

An independent samples t-test compared scores for the online quizzes between experimental (*M* = 19.90 , *SD* = 2.53, *n* = 20) and control group (*M* = 12.67 , *SD* = 2.61, *n* = 15). Shapiro-Wilk statistic was non-significant for both groups. The t test was non-significant *t* (33) = 1.41, *p* = .169, two-tailed. No effect on online quiz scores is found.

6. Is there a difference in the effect of frequent deadlines between sexes?

A two-way ANCOVA was conducted to analyze whether there was a difference between sexes on Academic cognition. There was a significant effect of group *F* (1,33) =9.25, *p*=.005, partial η^2 =.219. There was no effect of gender *F* (1,33) =.21, *p*=.650, partial η^2 =.006. There was no interaction effect *F* (1,33) =2.69, *p*=.111, partial η^2 =.075.
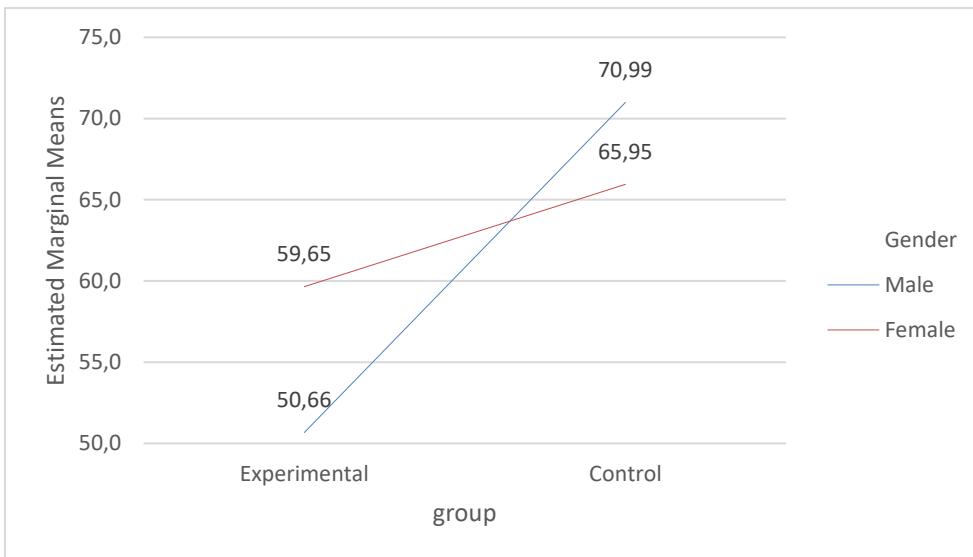
Figure 3. Total scores on the post-test for Academic Cognition. Covariates appearing in the model are evaluated at the following values: Total score pre-test Academic Cognition = 72.32.

A two-way ANCOVA was conducted to analyze whether there was a difference between sexes on Academic motivation. There was no effect of group F (1,33) =3.15, p=.085, partial η^2 =.087. No effect of gender is found F (1,33) =.13, p=.717, partial η^2 =.004. No interaction effect is found F (1,33) =.99, p=.327, partial η^2 =.029.
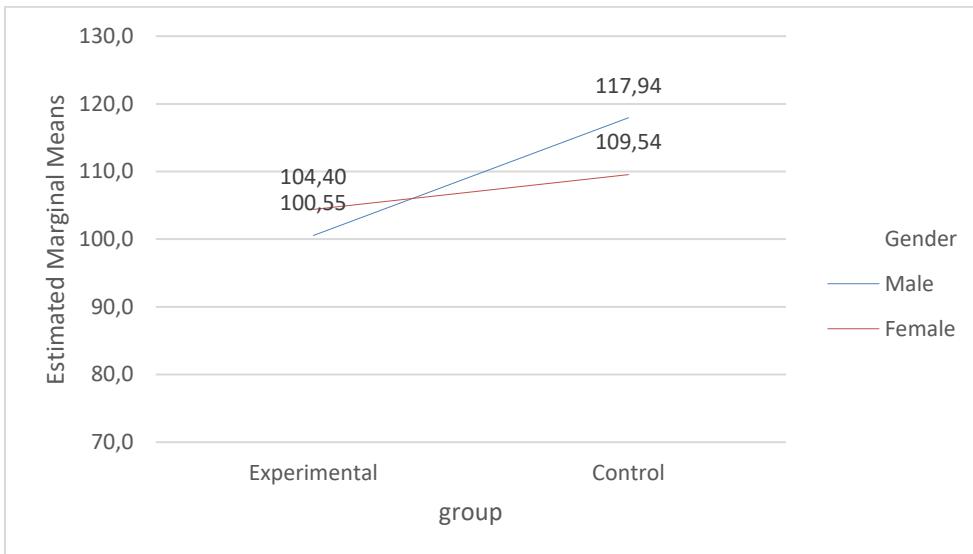

Figure 4. Total scores on the post-test for Academic Motivation. Covariates appearing in the model are evaluated at the following values: Total score pre-test Academic Motivation = 111.63.

A two-way ANCOVA was conducted to analyze whether there was a difference between sexes on Academic behavior. There was no effect of group F (1,32) =3.79, p=.060, partial η^2 =.106. No effect of gender is found F (1,32) =2.84, p=.102, partial η^2 =.081. No interaction effect is found F (1,32) =.07, p=.787, partial η^2 =.002.
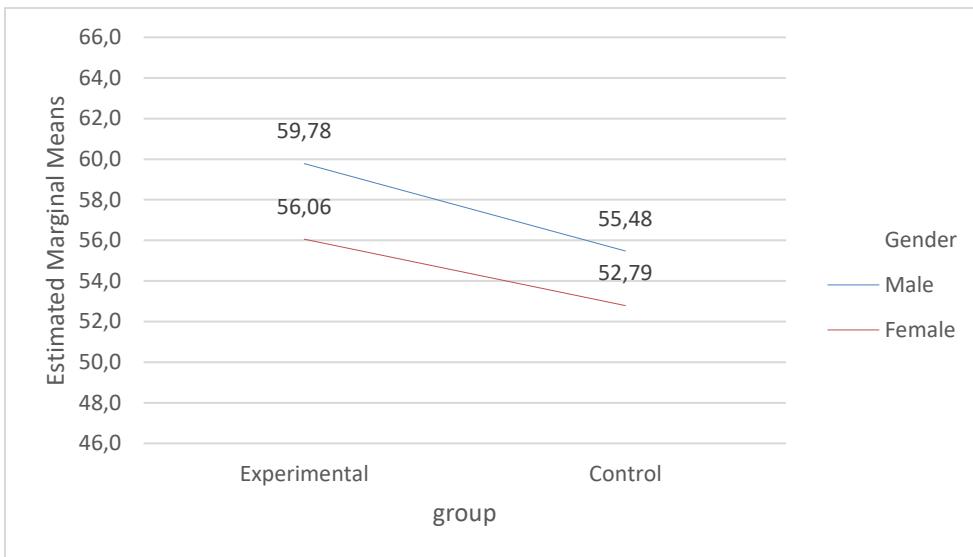
Figure 5. Total scores on the post-test for Academic Behavior. Covariates appearing in the model are evaluated at the following values: Total score pre-test Academic Behavior = 57.86.

To analyze whether there was a difference in grade on paper between the sexes. A Two-way ANOVA is conducted. There was no effect of group F (1,32) =.69, p=.421, partial η^2 =.021. No effect of gender is found F (1,32) =.11, p=.744, partial η^2 =.003. No interaction effect is found F (1,32) =.26, p=.611, partial η^2 =.008.
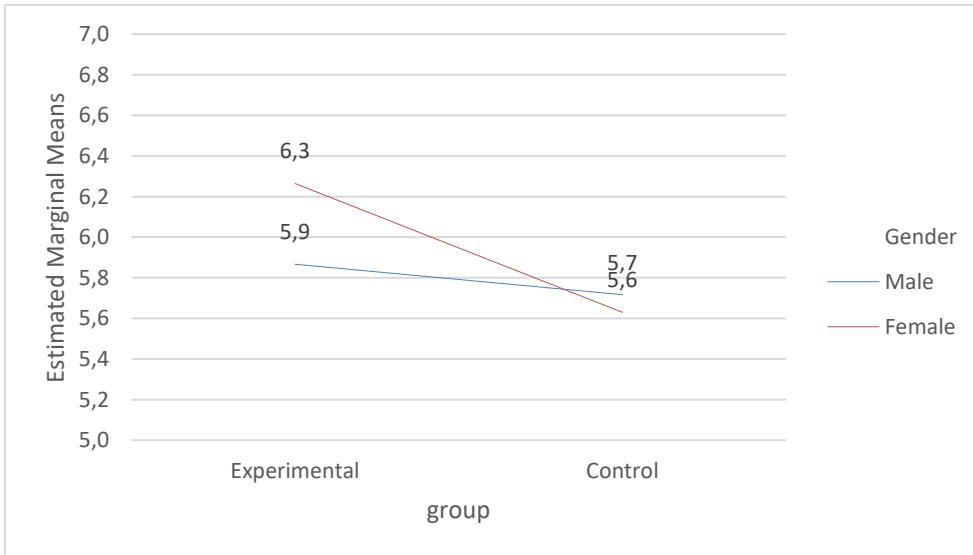
Figure 6. Average Grade on Paper. Differences between male and female students for control and experimental group.

To analyze whether there was a difference in score on online quizzes between the sexes. A Two-way ANOVA is conducted. There was no effect of group F (1,31) = 1.19, p=.284, partial η^2 =.037. There was no effect of gender F (1,31) = 1.36, p=.252, partial η^2 =.042. There was no interaction effect F (1,31) = 1.62, p=.213, partial η^2 =.050.
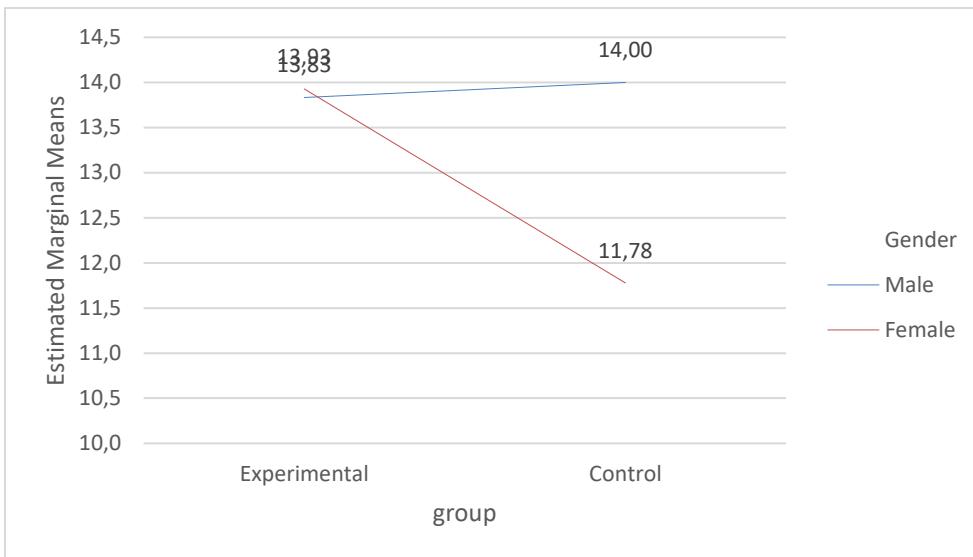
Figure 7. Average total score on online quizzes. Differences between male and female students for control and experimental group.

Distribution of learning for female students is shown in figure 9 and distribution of learning for male students is shown in figure 10. To analyze whether there was a difference for average learning time a week between the sexes. A Two-way ANOVA is conducted. For average time spent learning weekly with the vacation being excluded. There was no effect of group $F_{(1,31)} =.1.31$, $p=.262$, partial $\eta^2 =.040$. No effect of gender is found $F_{(1,31)} =.12$, $p=.736$, partial $\eta^2 =.004$. No interaction effect was found $F_{(1,31)} =1.35$, $p=.255$, partial $\eta^2 =.042$. For the female students a mean difference of 2.15 points is found. For further analysis a t-test was conducted to see whether there is a difference for female students in the experimental and control condition. The t- test was non-significant $t_{(21)} =1.87$, $p = .076$, two-tailed. The mean difference for male students was 0.17 no further analysis was conducted.
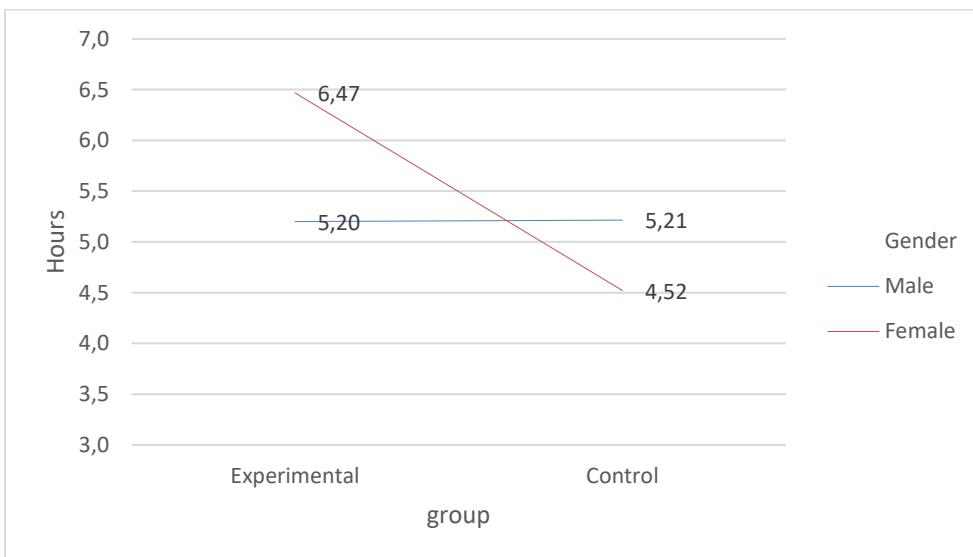
Figure 8. Average time spent learning weekly. Differences between male and female students for control and experimental group.

In the figure 8 there seems to be an interaction effect for female students although there is no effect. In figure 9 it is shown female students in the experimental group spent more time learning than female students in the control group. To analyze whether there is a difference for female students on time spent learning weekly between groups a t-test for the female population only was conducted, experimental ($M = 6.47, SD = 2.76$, $n = 14$) and control group ($M = 4.52, SD = 1.60$, $n = 9$). The t test was non-significant $t(21) = 1.92$, $p = .069$, two-tailed.
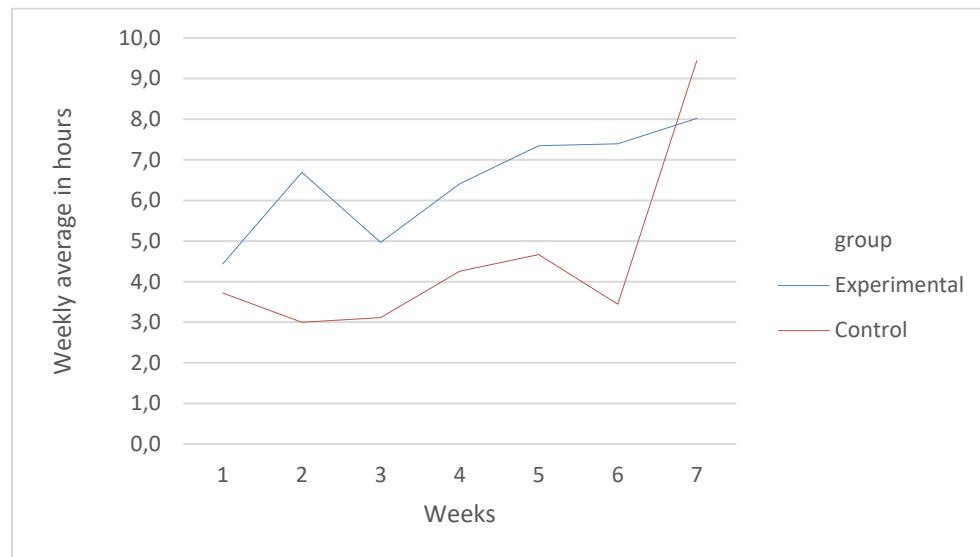
Figure 9. Average time spent learning weekly by Female students. Differences between control and experimental group.

To analyze whether there is a difference for male students between groups a t-test for the male population only was conducted. The experimental ($M = 5.20, SD = 1.07$, $n = 5$) and control group ($M = 5.21, SD = 2.74$, $n = 7$). The t test was non-significant $t(21) = -0.11$, $p = .991$, two-tailed. Figure 10 shows no differences between male students are expected.
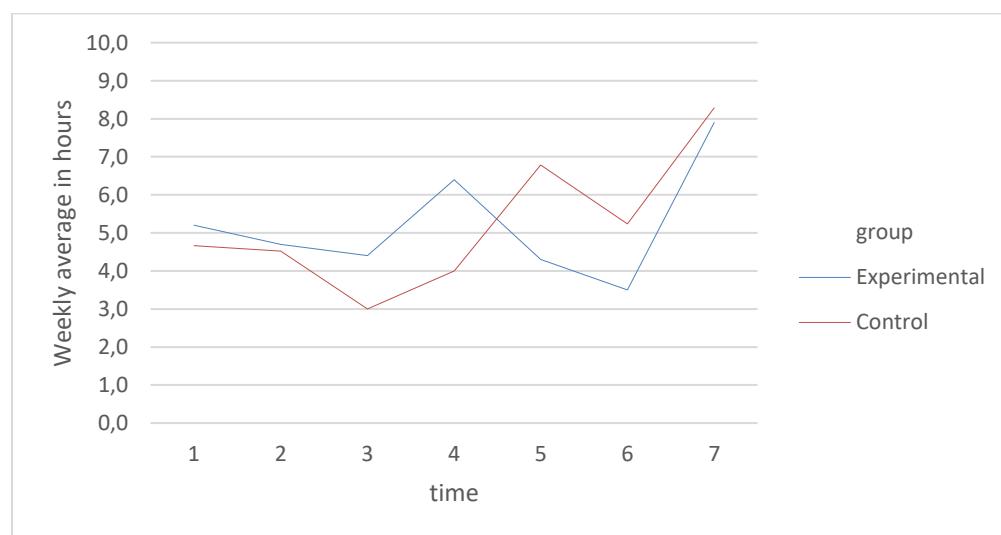

Figure 10. Average time spent learning weekly Male students. Differences between control and experimental group.

<center>**Discussion**</center>

This study focused on the use of frequent deadlines in Blended courses in higher education. In the experimental group students were allocated to an experimental condition with weekly deadlines and the control condition had end of term deadlines. The expected effect of frequent deadlines was that setting deadlines leads to better distribution of learning activities resulting in better learning outcomes in the end (Fulton et al., 2013; Azevedo et al., 2008). Furthermore, distributing the learning of students helps them in planning of their work and stimulates self-regulated learning skills (Spanjers et al., 2015).The relevance of this study is to combine frequent deadlines the effect on distribution of learning activities, learning outcomes and self-regulated learning. In past studies this has not been done. If significant results are found this can improve designing curriculum by adding frequent deadlines during the course stimulating distribution of learning. Self- regulated learning was measured by a modified version of the MSLQ, with three scales namely, Academic cognition, Academic motivation and Academic behavior. Learning outcomes consisted of the measurement of two assignments, namely the grade on the paper assignment and the scores on the online quizzes. These online quizzes were knowledge-based questions about the theory in the LMS.

The results showed that the use of frequent deadlines in the experimental group did not have the expected effect. In conclusion a significant effect of frequent deadlines on academic cognition with the experimental group scoring lower contrary to the expected direction. There was no effect on academic motivation and academic behavior. With respect to learning outcomes, no effects were found between the experimental and control group. For distribution of learning activities, no significant difference could be found. The study showed that the experimental group spend 1.31 hours a week more on learning than the control group. From week one to six the mean scores were higher in the experimental group suggesting more distributed learning as predicted by Fulton et al (2013). These results show no effects probably because the sample size was too small. In the last week students in the control group spent more time learning. This could be because they procrastinated and mass their learning at the end of term. This can be an indication that the experimental group did a better job at planning their work with the support of weekly deadlines.

It was expected there would be a difference between male and female students for self-regulated learning skills and consequently learning outcomes (Peklaj and Pečjak, 2002; Martin, 2004). No significant differences in self-regulated learning, learning outcomes and distribution of learning were found between sexes.

Despite no significant results are found female students have a mean-difference of 2.15 points on online quiz scores. The t-test showed a trend towards significance. A small sample size could be the reason no effect is found. This suggests learning outcomes could improve for female students. The mean difference of 1.95 hours a week between female students in the experimental group and control group was not significant. The t-test showed a trend towards significance suggesting the intervention

seems to be effective for female students. The small sample size could be the reason no significant result is found. On average spending 1.95 hours a week more on coursework can be seen as a positive result. In further research it is interesting to study the effect of frequent deadlines on female students. It is shown the male students were not affected by the intervention. These findings on distribution of learning activities indicate that with a larger sample size it was more likely to find significant results.

If there is no improvement in distribution of learning activities an increase in self-regulated learning skills and learning outcomes will be unlikely (Spanjers et al., 2015). The non-significant results can also be explained by the low rate of 3.7 out of the 7 assignments handed in per student. Because students on average did not hand in half of their assignments in time, no increase in distribution of learning activities was found. For this assignment it was impossible to enforce stricter deadlines since this was against the policy of the University of applied sciences. The effect of the online quizzes benefiting distribution of learning activities cannot be found since around half of the students in the experimental group did not finish the online quizzes weekly.

Regarding academic cognition, the experimental group scored significantly lower than the control group. This is the opposite to of theoretical assumptions (Spanjers et al., 2015). An explanation for this unexpected finding is that the intervention lowered student motivation in the experimental. Intrinsic motivation can decrease when deadlines are set externally (Amible, De Jong & Lepper, 1976). In the Self-determination theory of Deci & Ryan (1987) the decrease in motivation is explained due to lower perceived autonomy. An important finding in more recent research on deadlines is that groups with weekly deadlines and end of semester deadlines had the same levels of perceived autonomy (Fulton et al., 2013). For this group the perception of autonomy could have been lower since the students are used to end of term deadlines in all their other courses. The research by Fulton et al., (2013) was conducted for an online course were participants did not know they were having more or less deadlines than normal. This was not the case for the participants in this study since they have no weekly deadlines in any of their other courses. This could have led to a negative impact on perceived autonomy leading to lower motivation. Low motivation seemed to be a problem during this study. In a personal conversation with the department of teacher education it was told students in teacher education at University of Applied Sciences Utrecht at the English language Faculty were less motivated and prepared compared to other disciplines of teacher education. About half of the students that agreed to participate had complete data. An interesting side effect of the study was noted by the professors during an evaluation of the collaboration. They told they liked getting notified on what coursework had to be done. This could be an interesting research topic in studying how teachers can be supported.

Another reason for decreased motivation could be the implementation of a new LMS alongside the system the students were used to (HUBLe). At early stages of implementation of blended learning student resistance is normal (Holley & Oliver, 2010; Davidson, 2011). Students also want to see clear

educational value of an imposed change otherwise they are resistant to the technological change (Waycott, Bennett, Kennedy Dalgarno & Gray, 2010). Since no such explanation was given in advance, students might have been resistant to using the LMS resulting in demotivation. In the experimental group the students were supposed to use the LMS more this can be a reason for even more demotivation. Demotivation can result in negative emotions that in turn can decrease self-regulated learning in students which in turn decreases learning outcomes in Mathematics. Positive emotions in mathematics class increased self-regulated learning scores (Ahmed, Van der Werf, Kuyper & Minnaert, 2013). An explanation for the decrease in post-test scores is that students did not like the course or experienced negative emotions during the course. Raised arousal levels due to more deadlines might lead to negative emotion and decreased perception of self-regulated learning skills. Attitude towards own learning process declines over time in medical school (Woloschuk, Harasym & Temple, 2004). The attitude towards their own learning could have also decreased during the term.

Students have difficulties in self-estimation (Trofimovich et al., 2016). Students tend to be more positive in predicting what will happen or how well we will do in the future (Sharot, Riccardi, Raio & Phelps, 2007). Learners also typically overestimate their performance (Kornell & Bjork, 2009). In hindsight students might have concluded that they did not learn as well as they predicted in the pre-test leading to more negative results in the post-test. Self-assessment accuracy is often low among students in secondary education if they are not trained in this skill (Raaijmakers, van Merriënboer & van Gog, 2019). In the second year skills might still not be fully developed.

Finally, students did not have an assignment for a grade at the end of the course, directly related to the content of the knowledge delivered online. The pre-test asked how student learned in general and the post-test specifically asked how the students performed for the specific course with the intervention. Students might have felt less need for using a lot of learning strategies they would have used if they had such an assignment at the end of the course. This could have big impact on the results concerning self-regulated learning skills. For further research it is advisable to use a course that has an assignment at the end of the course directly related to the knowledge delivered online. This way the learning outcomes are more valid for research purposes since the assignments are about the theory learned during the course. This was not necessarily the case for the paper assignment.

Theoretical implications. This study contributes in making a design on how to measure the influence of frequent deadlines on learning outcomes, self-regulated learning and distribution of learning activities. Since the deadlines were not that strict no distribution of learning activities was enforced and no effect is found on self-regulated learning and learning outcomes. Not much research is done on the effect of frequent deadlines on learning in general (Fulton et al., 2013). A conclusion can be that frequent deadlines are not effective unless they are enforced.

Practical implications. The study did not enforce or stimulate distribution of learning activities enough therefore no conclusions can be drawn that are of practical use. This

research design could be of use for further studies with the adjustments of harder deadlines and a more longitudinal design. Harder deadlines combined with a concrete consequence might lead to students handing in more assignments and consequently more distribution of learning activities. Distribution of learning activities in turn leads to better learning outcomes (Fulton et al., 2013) and more self-regulated learning (Spanjers et al., 2015). A more longitudinal design gives students more time to change their habits, changing a habit on average takes 66 days (Lally et al., 2010).In further research students should be asked more about their perceived autonomy, since low perceived autonomy leads to lower motivation.

Limitations. In this study a self-evaluation questionnaire was used. The adjusted MSLQ was tested on its reliability and found to be reliable, but self-evaluation is less reliable than observations of behavior. This can influence internal validity. Students knew they were taking part in an experiment. The external validity of this study is limited since it only concerns students in teacher education for English teacher. The study used a convenience sample and students participated voluntarily. Also, the participants seemed to be less motivated then students in other fields of teacher education than English.

Dropout rate in the experimental group was 44 % and for the control group 57%. This also meant most of the data of the participating students was not complete leading to smaller sample sizes. Bigger sample sizes are more able to produce significant results (Lenth, 2001).

At the end of the course one of the professors of the course fell ill due to a burn-out. Her students were divided over both experimental group and control group classes. Students could have more easily figured out what the control-group and what the experimental group was influencing research outcomes. The professors that were teaching the experimental groups followed the extra instructions they had for this study carefully. They did well in supporting the experiment.

The course students took was two months. This is a short time span and can be another reason why no significant results were found. Research found that learning a new habit can take between 18 and 254 days on average it takes 66 days for the behavior to become automatic (Lally, Van Jaarsveld, Potts & Wardle, 2010). A more longitudinal repeated measures design of more than 66 days could produce better results since behavioral change needs more time. Measuring for a longer period of time could show more habitual change.

If this study is repeated among other populations of students and with a more longitudinal design effects could increase. Students will have enough time to form new habits and get familiar with a new LMS. The addition of harder deadlines should also stimulate more distribution of learning activities. In this study no effect was found of frequent deadlines, however it is relevant to focus future research on this factor and to replicate this study. Research findings show trends towards effects on the learning process and the learning outcomes of students. It is interesting to study these effects more in-depth.

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Appendices

Appendix A. Learning goals Beroep 4

Deze cursus heeft de volgende leerdoelen:

De student:

1. Onderkent het belang van zijn of haar rol als pedagoog op het vlak van een veilige en gestructureerde leeromgeving, persoonsvorming en burgerschapsvorming. Geeft aan wat naast de eigen persoon, het eigen vak hierbij voor toegevoegde waarde heeft.
2. Beargumenteert de pedagogische opdracht van de leraar in het AVO/BO. Hierbij wordt gebruik gemaakt van de aangeboden literatuur, de actuele maatschappelijke ontwikkelingen, de analyse van eigen opvoeding en de eigen levensovertuiging, waarden en normen.
3. Relateert de eigen opvattingen over opvoeden expliciet aan de diverse pedagogen en hun benaderingen die in de cursus aan bod komen.
4. Oefent met het tot stand brengen van een veilig pedagogisch klimaat (orde houden).
5. Benoemt pedagogisch gedrag dat helpt om een veilig pedagogisch klimaat en krachtige leeromgeving tot stand te brengen en relateert dit aan de eigen pedagogische opvattingen.
6. Verantwoordt een keuze die gemaakt moet worden in een ethisch en/of moreel dilemma, zoals zich dat voor kan doen in de praktijk van een docent, laat hierbij een adequate morele redenatie zien.
7. Betoogt op een adequate manier. Wat wil zeggen dat in de toetsopdrachten sprake is van goede samenhangende en leesbare teksten waarin standpunten worden onderbouwd met argumenten voor en tegen en er sprake is van ondergeschikte punten. Gegeven argumenten worden onderbouwd met theorie, feiten, ervaringen en waar nodig concrete verwijzing naar passende bronnen.

Appendix B. Checklist vaardighedendossier Beroep 4

Het vaardighedendossier wordt gecheckt op compleetheid. Daarnaast moet het vaardighedendossier er netjes uitzien. Werk met een voorblad, een inhoudsopgave, een literatuurlijst en bijlagen.

Wat	Check op compleet	Voldaan
Voorblad	De student heeft een voorblad toegevoegd met - Naam - Studentnummer - Dossiernaam	
Inhoudsopgave	De student heeft een inhoudsopgave toegevoegd	
Opdracht 1	De student heeft de zelfanalyse volledig ingevuld en toegevoegd	
Opdracht 2	De student heeft een foto van zijn/haar waardenmuur toegevoegd	
	De student heeft minimaal drie leerdoelen toegevoegd	
	De student heeft een korte pedagogische visie geschreven(1/2 A4) waarin de belangrijkste waarden terugkomen en waarin wordt aangegeven welke invloed dit heeft op de manier van lesgeven.	
Opdracht 3	De studenten hebben een portret opgezet rondom een voor hen inspirerende pedagoog. De presentatie (in de eigen gekozen vorm) is toegevoegd aan het dossier	
	De studenten hebben in week 5 hun portret gepresenteerd aan de andere studenten of de student heeft een opname van de presentatie toegevoegd	

Opdracht 4	Observeren en interviewen: - De student heeft het resultaat van de observatie toegevoegd (max 1/2 A4) - De student heeft het observatieschema in de bijlage toegevoegd - De student heeft het resultaat van het interview toegevoegd (max 1/2 A4) - De student heeft de leidraad van het interview in de bijlage toegevoegd	Step 1
	Lesvoorbereiding: - De student heeft de lesvoorbereiding toegevoegd - De student heeft een verantwoording van de les geschreven op basis van literatuur (max 3 A4). In de verantwoording komen de volgende onderwerpen terug: Wat de student doet aan klassenmanagement Hoe de student zorgt voor een krachtige leeromgeving Hoe de student zorgt voor een veilige leeromgeving Hoe de les bijdraagt aan de pedagogische competenties die de student nog wilde ontwikkelen (opdracht 1, de zelfanalyse) Hoe de les is gekoppeld aan de pedagogische visie van de student (opdracht 2, Waardenmuurtje en Verkuyl's inleiding op de opdracht)	Step 2
	De gegeven les: - De student heeft een link naar de opname van de gegeven les toegevoegd, een videocompilatie van de gegeven les toegevoegd of een observatieverslag van een werkplekbegeleider of een collega toegevoegd.	Step 3
	Reflectie op de gegeven les (max 3 A4): - De student heeft een reflectie toegevoegd waarin hij/zij reflecteert op de gegeven les met in ieder geval de volgende onderwerpen: klassenmanagement, krachtige leeromgeving, veilige leeromgeving, orde houden, de pedagogische competenties en jouw pedagogische visie.	Step 4

Literatuurlijst en bijlagen	De student heeft een literatuurlijst toegevoegd en zo nodig gewerkt met bijlagen.	

Algemene opmerkingen:

Appendix C Beoordelingsrubric betoog Beroep 4

Naam student:

Studentnummer:

Beoordelaar:

Datum:

Cijfer:

De student heeft het dossier op tijd ingeleverd via DPF. Na controle van de Ephorus scan is er geen sprake van plagiaat. Is dit niet in orde dan gaat de docent niet over tot beoordeling van het dossier.

Alle standaarden van het dossier moeten voldoende of hoger gescoord zijn anders wordt het dossier beoordeeld met NVD.

Scores op standaarden						
1. Betogen (20%)	1.1:		1.2:		1.3:	
	Gemiddelde score standaard 1:					
2. Taaldoel (10%)	2.1:					
	Gemiddelde score standaard 2:					
3. Pedagogische ideeën (70%)	3.1:	3.2:	3.3:	3.4:	3.5:	3.6
	Gemiddelde score standaard 3:					
Cijfer betoog =						

Toelichting: Op alle standaarden, betogen, taaldoel en pedagogische ideeën, moet een voldoende worden behaald (≥5,5). Er wordt niet gecompenseerd. Het cijfer voor het betoog wordt afgerond op één decimaal achter de komma.

Beroep 4. De leraar als pedagoog. Beoordelingsrubric betoog (2017-2018).

Standaarden

Betogen					
		Onvoldoende	**Voldoende**	**Goed**	**Uitstekend**
1.1	Opbouw (leerdoel 7)	*Het betoog bestaat niet uit een inleiding, kern en slot en het betoog is onsamenhangend en slecht leesbaar*	*Het betoog bestaat uit een inleiding, kern en slot. Het betoog is soms nog onsamenhangend maar wel voldoende leesbaar*	*Het betoog bestaat uit een inleiding, kern en slot. Het betoog is samenhangend en goed leesbaar.*	*Het betoog bestaat uit een inleiding, kern en slot. De lezer wordt het gehele betoog bij de hand genomen en het is zeer goed leesbaar.*
1.2	Argumenteren (leerdoel 7)	*De gegeven argumenten ondersteunen de gegeven stelling niet.*	*De argumenten ondersteunen de gegeven stelling.*	*Het betoog heeft meerdere lagen, met een duidelijke afweging van argumenten waarbij de student overtuigend overkomt.*	*Het betoog heeft een complexe redeneerketen met een duidelijke afweging tussen diverse argumenten waarbij de student overtuigend overkomt.*
1.3	Onderbouwing (leerdoel 7)	*In het betoog wordt geen literatuur gebruikt.* *In het betoog wordt geen koppeling gemaakt met de schoolpraktijk.*	*De gegeven argumenten worden af en toe onderbouwd met theorie.* *In het betoog wordt een koppeling gemaakt met de schoolpraktijk.*	*Vanuit verschillende bronnen wordt het betoog onderbouwd.* *In het betoog wordt een koppeling gemaakt met de schoolpraktijk.*	*Binnen alle argumenten vullen de theorie en de schoolpraktijk elkaar aan, waarin vanuit verschillende bronnen wordt onderbouwd.*
		(< 5,5)	**(5,5 – 6,9)**	**(7,0 – 8,4)**	**(8,5 – 10)**

Opmerkingen/feedback:

2. Taaldoel					
		Onvoldoende	**Voldoende**	**Goed**	**Uitstekend**
2.1	Taal (leerdoel 7)	*Het betoog bevat meer dan 5 spelfouten, 5 grammaticale fouten en/of 5 interpunctiefouten.* *Het betoog bevat APA fouten.* *Het aantal woorden is meer dan het maximum van 2000.*	*Het betoog bevat tussen de 3 en 5 spelfouten, grammaticale fouten en/of interpunctiefouten.* *Het betoog heeft nagenoeg geen APA fouten.* *Het maximum aantal woorden van 2000 is niet overschreden.*	*Het betoog bevat minder dan 3 spelfouten, grammaticale fouten en/of interpunctiefouten.* *Het betoog heeft geen APA fouten.* *Het maximum aantal woorden van 2000 is niet overschreden*	*Het betoog bevat geen spelfouten, grammaticale fouten en/of interpunctiefouten.* *Het betoog heeft geen APA fouten.* *Het maximum aantal woorden van 2000 is niet overschreden.*
		(< 5,5)	**(5,5 – 6,9)**	**(7,0 – 8,4)**	**(8,5 – 10)**

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Opmerkingen/feedback:

Pedagogische ideeën

		Onvoldoende	Voldoende	Goed	Uitstekend
3.1	**De rol van pedagoog** (leerdoel 1)	*Er wordt geen koppeling gemaakt naar de rol van pedagoog.*	*De student maakt een koppeling naar de rol van pedagoog en laat zien hoe dit bijdraagt aan persoonsvorming of burgerschapsvorming*	*De student kijkt kritisch naar zijn rol als pedagoog en laat zien hoe dit bijdraagt aan persoonsvorming of burgerschapsvorming*	*De student kijkt kritisch naar zijn rol als pedagoog en beredeneert hoe dit bijdraagt aan persoonsvorming en burgerschapsvorming.*
3.2	**Normen en waarden** (leerdoel 2)	*Er wordt geen koppeling gemaakt tussen het handelen en de eigen opvoeding, normen en waarden of de koppeling is onduidelijk*	*Het handelen wordt gekoppeld aan de eigen opvoeding, normen en waarden.*	*Het is duidelijk hoe het handelen voortkomt uit de eigen opvoeding en de normen en waarden die de student heeft.*	*Het is duidelijk hoe het handelen voortkomt uit de eigen opvoeding en de normen en waarden die de student heeft. De student kijkt hier kritisch naar.*
3.3	**Koppeling naar pedagogen** (leerdoel 3)	*Er wordt geen koppeling gemaakt naar een pedagoog/pedagogen.*	*De student maakt een koppeling naar één pedagoog.*	*De student laat zien hoe het handelen gebaseerd is op opvattingen van diverse pedagogen.*	*De student kijkt kritisch naar andere pedagogen en laat zien hoe het handelen voortkomt uit de opvattingen van diverse pedagogen.*
3.4	**Klassenmanagement** (leerdoel 5)	*Er wordt geen koppeling gemaakt tussen het handelen en principes van goed klassenmanagement*	*De student koppelt het handelen aan principes van goed klassenmanagement*	*De student koppelt het handelen aan principes van goed klassenmanagement en kan uitleggen hoe dit werkt*	*De student koppelt het handelen aan principes van goed klassenmanagement, kan dit uitleggen en benoemt hierbij verbeteringen of leerpunten voor zijn eigen praktijk.*
3.5	**Veilige leeromgeving en een krachtige leeromgeving** (leerdoel 5)	*Het is niet duidelijk hoe de student zorgt voor een veilige leeromgeving of een krachtige leeromgeving of de redenering is onjuist.*	*De student beschrijft hoe het handelen bijdraagt aan een veilige en krachtige leeromgeving.*	*De student beredeneert kritisch waarom het handelen bijdraagt aan een veilige en krachtige leeromgeving.*	*De student beredeneert kritisch waarom het handelen bijdraagt aan een veilige en krachtige leeromgeving en geeft aan waar nog leerpunten liggen.*
3.6	**Morele redenatie** (leerdoel 6)	*Er wordt geen morele redenatie gemaakt.*	*De student verantwoordt het eigen handelen. Kan dat wat hij/zij doet? En gebruikt hierbij morele argumenten.*	*De student laat een morele redenatie zien met morele argumenten over het eigen handelen en koppelt dit aan het begrip integriteit en normatieve professionalisering*	*De student laat een morele redenatie zien met morele argumenten over het eigen handelen en koppelt dit aan het begrip integriteit, normatieve professionalisering en drieslagleren (wie wil ik zijn).*
		(< 5,5)	**(5,5 – 6,9)**	**(7,0 – 8,4)**	**(8,5 – 10)**

Opmerkingen/feedback:

Appendix D Survey Distribution of learning activities and informed consent

Beste student,

Het is de eerst lesweek van het vak Beroep 4.

Voor mijn Masterthesis Onderwijswetenschappen aan de Universiteit Utrecht doe ik onderzoek naar studiegedrag van studenten. Hiervoor willen we jullie vragen deze vragenlijst te vullen. Het invullen van de vragenlijst is vrijwillig. Voor het onderzoek is het wel van belang om de vragenlijst volledig in te vullen. Jouw persoonlijke antwoorden worden niet met de Hogeschool Utrecht gedeeld. Je wordt wel gevraagd naar je studentnummer, maar alle vragenlijsten worden geanonimiseerd en vertrouwelijk behandeld. De resultaten zullen niet te herleiden zijn naar één persoon, maar worden alleen gebruikt voor onderzoeksdoeleinden.

Bedankt voor je deelname!!

Jelmer Agricola j.j.agricola@uu.nl

Wanneer je de vragenlijst invult, ben je akkoord met dit onderzoek. Specifiek betekent dit dat:

- Je uitleg hebt gekregen over het onderzoek;
- Je de informatie van het onderzoek goed hebt gelezen;
- Je de inhoud van het onderzoek begrijpt;
- Je eventuele vragen over het onderzoek hebt gesteld;
- Je weet dat je zonder opgaaf van redenen op ieder moment kan stoppen met het onderzoek.
- Je ermee instemt 7 wekelijks online vragenlijsten in te vullen over leeractiviteiten
- Je ermee instemt om aan het begin en einde van de cursus een vragenlijst in te vullen
- Je ermee instemt om jouw cijfer voor dit vak te delen. Deze gegevens zullen éénmalig worden opgevraagd aan de hand van jouw studentnummer en zullen uiterst vertrouwelijk worden behandeld.

Vraag 1

Wat is je studentnummer

Vraag 2

Wil je meewerken aan dit onderzoek?

Kies één antwoord:

Ja

Nee

Vraag 3

Geslacht

Kies één antwoord:

Man

Vrouw

Vraag 4

Welke jaarlaag en welk niveau is je stageklas

Vraag 5

Indien je op de hoogte gehouden wil worden over de resultaten van het onderzoek, kan je hier je HU e-mailadres invullen.

Leeractiviteiten

Vraag 1

Hoe lang heb je afgelopen maandag (4 februari) in uren en minuten aan beroep 4 gewerkt?

Vraag 2

Hoe lang heb je afgelopen dinsdag (5 februari) in uren en minuten aan beroep 4 gewerkt?

Vraag 3

Hoe lang heb je afgelopen woensdag (6 februari) in uren en minuten aan beroep 4 gewerkt?

Vraag 4

 Hoe lang heb je afgelopen donderdag (7 februari) in uren en minuten aan beroep 4 gewerkt?

Vraag 5

 Hoe lang heb je afgelopen vrijdag (8 februari) in uren en minuten aan beroep 4 gewerkt?

Vraag 6

Hoe lang heb je afgelopen zaterdag (9 februari) in uren en minuten aan beroep 4 gewerkt?

Vraag 7

 Hoe lang heb je afgelopen zondag (10 februari) in uren en minuten aan beroep 4 gewerkt?

Appendix E. Questionnaire Self regulation skills (post-test)

Je gaat nu een aantal stellingen beantwoorden over je studiegedrag. Geef bij elke stelling aan in hoeverre je het hiermee eens bent waarbij 1 staat voor helemaal oneens, 4 voor neutraal, en 7 voor helemaal eens. Er zijn geen 'goede' of 'foute' antwoorden.

Item	1	2	3	4	5	6	7
Academische cognitie							
1 Wanneer ik voor dit vak studeer, oefen ik door de leerstof te blijven herhalen.							
2 Wanneer ik studeer voor dit vak, verzamel ik informatie uit verschillende bronnen zoals kennisclips of werkcolleges, schriftelijk materiaal en klassenactiviteiten.							
3 Wanneer ik de kennisclips of werkcolleges van dit vak volg, maak ik aantekeningen om mijn gedachten te helpen ordenen.							
4 Als het cursusmateriaal te moeilijk is, pas ik mijn manier van studeren aan zodat ik de stof beter begrijp.							
5 Wanneer ik studeer voor dit vak, dan neem ik mijn aantekeningen steeds opnieuw door.							
6 Wanneer ik de kennisclips bekijk of werkcolleges bijwoon, probeer ik de stof te verbinden aan de kennis die ik al heb.							
7 Wanneer ik studeer voor dit vak, dan neem ik de lesstof en mijn aantekeningen door om de meest belangrijke informatie te achterhalen.							
8 Ik pas mijn manier van leren aan. Daarbij houd ik rekening met de eisen van het vak en de manier waarop de werk colleges zijn ingericht.							
9 Ik leer kernwoorden uit mijn hoofd om te onthouden wat de belangrijke theorieën voor dit vak zijn.							

10 Ik probeer de leerstof van dit vak te begrijpen door verbindingen te maken tussen klassenactiviteiten en de onderwerpen uit de werkcolleges.							
11 Ik maak eenvoudige schema's, diagrammen of tabellen om me te helpen het cursusmateriaal te ordenen.							
12 Ik probeer een onderwerp te doorgronden en de relevantie te achterhalen in plaats van alleen de kennisclips te bekijken of werkcolleges bij te wonen.							
13 Ik maak lijstjes met belangrijke begrippen voor dit vak en probeer deze uit het hoofd te leren.							
14 Ik probeer onderwerpen uit de leerstof toe te passen in klassenactiviteiten en discussies in de les.							
15 Wanneer ik studeer voor dit vak, bestudeer ik mijn aantekeningen en maak ik een overzicht van belangrijke theorieën.							
16 Wanneer ik studeer voor dit vak, probeer ik te bepalen welke theorieën ik nog niet goed begrijp.							
Academische motivatie							
1 Ik houd mijzelf voor om vooral door te gaan met studeren, om zoveel mogelijk te leren.							
2 Ik houd mijzelf voor dat ik moet blijven studeren om deze cursus met goed gevolg af te sluiten.							
3 Ik houd mezelf voor dat het belangrijk is om de leerstof te begrijpen omdat ik het later nodig zal hebben.							
4 Ik maak studeren leuker door er een spelletje van te maken.							

5 Ik beloof mezelf dat ik straks iets mag doen wat ik zelf wil, als ik klaar ben met mijn 'leertaak' (zoals bijvoorbeeld het bekijken van kennisclips).							
6 Ik probeer te studeren op momenten wanneer ik beter gefocust kan zijn.							
7 Ik daag mezelf uit om het werk af te maken en leer zoveel als ik kan.							
8 Ik overtuig mezelf om door te gaan met studeren door te denken aan het halen van goede cijfers.							
9 Ik probeer het materiaal te verbinden met iets wat ik leuk of interessant vind om te doen.							
10 Ik probeer een spelletje te maken van het studiemateriaal of de taak die ik moet afmaken.							
11 Ik maak afspraken met mezelf dat als ik eerst een opdracht afmaak, ik daarna iets leuks mag doen.							
12 Ik pas mijn omgeving aan, zodat ik mij beter kan focussen op de leerstof.							
13 Ik stel mijzelf als doel om zoveel mogelijk te leren als ik kan.							
14 Ik vraag me (soms) af wat mijn uiteindelijke cijfer zou zijn, als ik mijn werk niet zou doen.							
15 Ik bedenk situaties waarbij het nuttig zou zijn als ik alle stof zou kunnen toepassen.							
16 Ik maak het studeren leuk door me te focussen op wat er leuk is aan de stof.							
17 Ik beloof mezelf een bepaalde beloning als ik eerst doe wat ik me had voorgenomen. .							

18 Ik zorg ervoor dat er zo min mogelijk word afgeleid als ik studeer								
19 Ik probeer om (steeds) beter te worden in wat wij voor dit vak leren en/of doen.								
20 Ik probeer mij eraan te herinneren hoe belangrijk het is om goed te presteren tijdens tentamens en opdrachten voor dit vak.								
21 Ik doe mijn best om de leerstof te koppelen aan mijn persoonlijke interesses.								
22 Ik bedenk een plezierige manier om het leerwerk af te maken.								
23 Ik mag van mijzelf iets leuks gaan doen op een later tijdstip, als ik eerst afmaak waar ik mee bezig ben.								
24 Ik probeer me te ontdoen van mogelijke afleidende factoren								
Academisch gedrag								
1 Ik voel mezelf vaak zo verveeld tijdens het studeren voor dit vak, dat ik voortijdig stop met wat ik me had voorgenomen te doen.								
2 Normaal studeer ik op een plek waar ik mij goed kan concentreren.								
3 Als ik hulp nodig zou hebben om de uitleg van de stof beter te begrijpen, zou ik hierom vragen.								
4 Ik werk hard om het goed te doen in de les, zelfs als ik het onderwerp niet leuk vind.								
5 Ik heb een vaste plek die ik alleen gebruik om te studeren.								
6 Als ik hulp nodig zou hebben met activiteiten in de klas, zou ik hierom vragen.								

7 Wanneer de leerstof moeilijk is, stop ik of bestudeer ik alleen de makkelijke stukken.								
8 Ik zorg ervoor dat ik bij blijf met de lesstof								
9 Ik zou de docent om hulp vragen, als ik deze nodig zou hebben.								
10 Zelfs wanneer de leerstof saai of oninteressant is, lukt het mij om door te gaan tot ik klaar ben.								
11 Het lukt me zelden om de voorbereiding voor de les af te hebben (zoals het lezen van de stof, of het kijken van kennisclips en doen van opdrachten).								
12 Ik zou een medestudent vragen om hulp als ik deze nodig zou hebben.								

Appendix F. Questionnaire Self regulation skills (pre-test)

Je gaat nu een aantal stellingen beantwoorden over je studiegedrag. Geef bij elke stelling aan in hoeverre je het hiermee eens bent waarbij 1 staat voor helemaal oneens, 4 voor neutraal, en 7 voor helemaal eens. Er zijn geen 'goede' of 'foute' antwoorden.

Item	1	2	3	4	5	6	7
Academische cognitie							
1 Wanneer ik voor een vak studeer, oefen ik door de leerstof te blijven herhalen.							
2 Wanneer ik studeer voor een vak, verzamel ik informatie uit verschillende bronnen zoals kennisclips of werkcolleges, schriftelijk materiaal en klassenactiviteiten.							
3 Wanneer ik de kennisclips of werkcolleges van een vak volg, maak ik aantekeningen om mijn gedachten te helpen ordenen.							
4 Als het cursusmateriaal te moeilijk is, pas ik mijn manier van studeren aan zodat ik de stof beter begrijp.							
5 Wanneer ik studeer voor een vak, dan neem ik mijn aantekeningen steeds opnieuw door.							
6 Wanneer ik de kennisclips bekijk of werkcolleges bijwoon, probeer ik de stof te verbinden aan de kennis die ik al heb.							
7 Wanneer ik studeer voor een vak, dan neem ik de lesstof en mijn aantekeningen door om de meest belangrijke informatie te achterhalen.							
8 Ik pas mijn manier van leren aan. Daarbij houd ik rekening met de eisen van het vak en de manier waarop de werk colleges zijn ingericht.							
9 Ik leer kernwoorden uit mijn hoofd om te onthouden wat de belangrijke theorieën voor een vak zijn.							

10 Ik probeer de leerstof van een vak te begrijpen door verbindingen te maken tussen klassenactiviteiten en de onderwerpen uit de werkcolleges.							
11 Ik maak eenvoudige schema's, diagrammen of tabellen om me te helpen het cursusmateriaal te ordenen.							
12 Ik probeer een onderwerp te doorgronden en de relevantie te achterhalen in plaats van alleen de kennisclips te bekijken of werkcolleges bij te wonen.							
13 Ik maak lijstjes met belangrijke begrippen voor een vak en probeer deze uit het hoofd te leren.							
14 Ik probeer onderwerpen uit de leerstof toe te passen in klassenactiviteiten en discussies in de les.							
15 Wanneer ik studeer voor een vak, bestudeer ik mijn aantekeningen en maak ik een overzicht van belangrijke theorieën.							
16 Wanneer ik studeer voor een vak, probeer ik te bepalen welke theorieën ik nog niet goed begrijp.							
Academische motivatie							
1 Ik houd mijzelf voor om vooral door te gaan met studeren, om zoveel mogelijk te leren.							
2 Ik houd mijzelf voor dat ik moet blijven studeren om deze cursus met goed gevolg af te sluiten.							
3 Ik houd mezelf voor dat het belangrijk is om de leerstof te begrijpen omdat ik het later nodig zal hebben.							
4 Ik maak studeren leuker door er een spelletje van te maken.							

5 Ik beloof mezelf dat ik straks iets mag doen wat ik zelf wil, als ik klaar ben met mijn 'leertaak' (zoals bijvoorbeeld het bekijken van kennisclips).							
6 Ik probeer te studeren op momenten wanneer ik beter gefocust kan zijn.							
7 Ik daag mezelf uit om het werk af te maken en leer zoveel als ik kan.							
8 Ik overtuig mezelf om door te gaan met studeren door te denken aan het halen van goede cijfers.							
9 Ik probeer het materiaal te verbinden met iets wat ik leuk of interessant vind om te doen.							
10 Ik probeer een spelletje te maken van het studiemateriaal of de taak die ik moet afmaken.							
11 Ik maak afspraken met mezelf dat als ik eerst een opdracht afmaak, ik daarna iets leuks mag doen.							
12 Ik pas mijn omgeving aan, zodat ik mij beter kan focussen op de leerstof.							
13 Ik stel mijzelf als doel om zoveel mogelijk te leren als ik kan.							
14 Ik vraag me (soms) af wat mijn uiteindelijke cijfer zou zijn, als ik mijn werk niet zou doen.							
15 Ik bedenk situaties waarbij het nuttig zou zijn als ik alle stof zou kunnen toepassen.							
16 Ik maak het studeren leuk door me te focussen op wat er leuk is aan de stof.							
17 Ik beloof mezelf een bepaalde beloning als ik eerst doe wat ik me had voorgenomen.							

18 Ik zorg ervoor dat er zo min mogelijk word afgeleid als ik studeer							
19 Ik probeer om (steeds) beter te worden in wat wij voor een vak leren en/of doen.							
20 Ik probeer mij eraan te herinneren hoe belangrijk het is om goed te presteren tijdens tentamens en opdrachten voor een vak.							
21 Ik doe mijn best om de leerstof te koppelen aan mijn persoonlijke interesses.							
22 Ik bedenk een plezierige manier om het leerwerk af te maken.							
23 Ik mag van mijzelf iets leuks gaan doen op een later tijdstip, als ik eerst afmaak waar ik mee bezig ben.							
24 Ik probeer me te ontdoen van mogelijke afleidende factoren							
Academisch gedrag							
1 Ik voel mezelf vaak zo verveeld tijdens het studeren voor een vak, dat ik voortijdig stop met wat ik me had voorgenomen te doen.							
2 Normaal studeer ik op een plek waar ik mij goed kan concentreren.							
3 Als ik hulp nodig zou hebben om de uitleg van de stof beter te begrijpen, zou ik hierom vragen.							
4 Ik werk hard om het goed te doen in de les, zelfs als ik het onderwerp niet leuk vind.							
5 Ik heb een vaste plek die ik alleen gebruik om te studeren.							
6 Als ik hulp nodig zou hebben met activiteiten in de klas, zou ik hierom vragen.							

7 Wanneer de leerstof moeilijk is, stop ik of bestudeer ik alleen de makkelijke stukken.								
8 Ik zorg ervoor dat ik bij blijf met de lesstof								
9 Ik zou de docent om hulp vragen, als ik deze nodig zou hebben.								
10 Zelfs wanneer de leerstof saai of oninteressant is, lukt het mij om door te gaan tot ik klaar ben.								
11 Het lukt me zelden om de voorbereiding voor de les af te hebben (zoals het lezen van de stof, of het kijken van kennisclips en doen van opdrachten).								
12 Ik zou een medestudent vragen om hulp als ik deze nodig zou hebben.								

Appendix G. Timetable and Risk analysis

Timetable

Month	Deadline from course	individual goals
6 January	Hand in draft version Poster presentation	Verwerken feedback op onderzoeksopzet
15 January	Inleveren concept proposal	Verwerken feedback op onderzoeksopzet,
24 January	submit research proposal	Verwerken feedback op onderzoeksopzet
7 Februari	Methoden en instrumenten af	Afname eerste surveys post test
7 Maart	Gedetailleerd data-analyseplan	inleveren analyseplan
11 April	Methoden en resultatensectie	Analyseren Data , schrijven resultaten en methoden
9 Mei	Conceptversie thesis	Afschrijven alle onderdelen thesis, verwerken (peer-)feedback
19 Juni	Masterthesisconferentie	Presentatie voorbereiden, data-package inleveren, thesis inleveren

Risk analysis

External parties in this study will be Eduseries and HU University of applied sciences utrecht.

Recruitment of participants won't be a major issue since there are working groups following the course Beroep 4 already confirmed. Only if to many students don't agree to coöperate in the research this might be a problem. Another issue can be if one of these parties disagrees to continue prematurely for one reason or the other. To prevent this I will make agreements in writing with all external parties as soon as the Research plan is approved.

Another issue can be data processing. To assure the data can be connected students each student will be assigned a number. This way I will be able to link the data to specific students.

Appendix H. FETC form

APPLICATION FORM FOR THE ASSESSMENT OF A RESEARCH PROTOCOL BY THE FACULTY ETHICS REVIEW BOARD (FERB) OF THE FACULTY OF SOCIAL AND BEHAVIOURAL SCIENCES

General guidelines for the use of this form

1. This form can be used for a single research project or a series of related studies (hereinafter referred to as: "research programme"). Researchers are encouraged to apply for the assessment of a research programme if their proposal covers multiple studies with related content, identical procedures (methods and instruments) and contains informed consent forms and participant information, with a similar population. For studies by students, the FERB recommends submitting, in advance, a research programme under which protocol multiple student projects can be conducted so that their execution will not be delayed by the review procedure. The application of such a research programme must include a proper description by the researcher(s) of the programme as a whole in terms of the maximum burden on the participants (e.g. maximum duration, strain/efforts, types of stimuli, strength and frequency, etc.). If it is impossible to describe all the studies within the research programme, it should, in any case, include a description of the most invasive study known so far.
2. Solely the first responsible senior researcher(s) (from post-doctoral level onwards) may submit a protocol.
3. Any approval by the FERB is valid for 5 years or until the information to be provided in the application form below is modified to such an extent that the study becomes more invasive. For a research programme, the term of validity is 2 years and any extension is subject to approval. The researcher(s) and staff below commit themselves to treating the participants in accordance with the principles of the Declaration of Helsinki and the Dutch Code of Conduct for Scientific Practices as determined by the VSNU Association of Universities in the Netherlands (which can both be downloaded from the FERB site on the Intranet[1]) and guarantee that the participants (whether decisionally competent or incompetent and/or in a dependent relationship vis-a-vis the researcher or not) may at all times terminate their participation without any further consequences.
4. The researcher(s) commit themselves to maximising the quality of the study, the statistical analysis and the reports, and to respect the specific regulations and legislation pertaining to the specific methods.
5. The procedure will run more smoothly if the FERB receives all the relevant documents, such as questionnaires and other measurement instruments as well as literature and other sources on studies using similar methods which were found to be ethically acceptable and that testify to the fact that this procedure has no harmful consequences. Examples of studies where the latter will always be an issue are studies into bullying behaviour, sexuality, and parent-child relationships. The FERB asks the researcher(s) to be as specific as possible when they answer the relevant questions while limiting their answers to 500 words maximum per question. It is helpful to the FERB if the answers are brief and to the point.
6. **Our FAQ document that can be accessed through the Intranet provides background information with regards to any questions.**
7. The researcher(s) declare to have described the study truthfully and with a particular focus on its ethical aspects.

Signed for approval[2]:

Date:

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[1] See: https://intranet.uu.nl/facultaire-ethische-toetsingscommissie-fetc

[2] The senior researcher (holding at least a doctoral degree) should sign here.

A.   **GENERAL INFORMATION/PERSONAL DETAILS**

1.

    a.   a. Name(s), position(s) and department(s) of the responsible researcher(s):
        Jelmer Agricola, Educational Sciences

    b.   Name(s), position(s) and department(s) of the executive researcher(s):
        Jelmer Agricola Educational Sciences

2. Title of the Master Thesis

How do frequent deadlines influence learning outcomes in blended learning in higher education.

3. Type of study (with a brief rationale):

Quasi-experimental design. The control group receives conventional education, the experimental group receives education with weekly deadlines. A questionnaire is taken from both groups pre test post test. Students report how much time they spend on the course every week and what days of the week.

4. Grant provider:

No grant provider

5. Intended start and end date for the study:

February 2019 – June 2019

6. Research area/discipline:

Educational Sciences: Cognition & ICT

7. For some (larger) projects it is advisable to appoint an independent contact or expert whom participants can contact in case of questions and/or complaints. Has an independent expert been appointed for this study?[3]:

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8. Does the study concern a multi-centre project, e.g. in collaboration with other universities, a GGZ mental health care institution, a university medical centre? Where exactly will the study be conducted? By which institute(s) are the executive researcher(s) employed?:

The study was conducted at Hogeschool Utrecht University of applied sciences in collaboration with Eduseries.

9. Is the study related to a prior research project that has been assessed by a recognised Medical Ethics Review Board (MERB) or FERB?
No

If so, which? Please state the file number:

B.   SUMMARY OF THE BACKGROUND AND METHODS

Background

1. What is the study's theoretical and practical relevance? (500 words max.):

The theoretical relevance of this study is to find out whether spacing learning activities helps students in blended learning. Literature suggests that quizzes positively affect attractiveness and effectiveness of blended learning (Spanjers et al., 2015) and lead to better learning outcomes (Dirkx, Kester, & Kirschner, 2014). Frequent quizzing activities can support or force students to distribute their learning activities over time. Blended learning can potentially improve higher education, if thoughtfully designed, an example is including frequent quizzes (Spanjers et al., 2015) . Thus making it interesting to compare blended learning environments with different types of quizzes with regard

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[3] This contact may, in principle, also be a researcher (within the same department, or not) who is able to respond to the question or complaint in detail. Independent is to say: not involved in the study themselves. The FERB upholds that an independent contact is not obligatory, but will be necessary when the study is more invasive.

to learning outcomes and motivation. Students have great difficulty in setting their own deadlines and often time this improperly, a course with instructor set deadlines will lead to higher grades (Fulton, Ivantiskaya, Bastian, Erofeev & Mendez, 2013).

The practical relevance of the stud is the possibility of Improving student learning by supplying better blended learning environments that facilitate or force students to distribute their learning activities over time. Improving student satisfaction if outcomes confirm distributing learning improves student satisfaction. If student satisfaction improves due to better learning environments this might lead to higher motivation.

2. What is the study's objective/central question?:

How do frequent deadlines influence learning outcomes in blended learning in higher education.

3. What are the hypothesis/hypotheses and expectation(s)?:

In the work field it is expected that new employees that finished higher education are proficient in self-regulating skills (Newman et al, 2015). Quizzing effects are suggested lead to better learning outcomes and more distribution of learning over time. distribution of learning over time effect (Spanjers et al., 2015) Studies suggest that learning outcomes are positively affected by externally set frequent deadlines. (Fulton et al., 2013;l Azevedo et al., 2008). leading to the first research question.

What is the effect of frequent deadlines on learning outcomes?

According to self determination theory lower perceived autonomy will lead to lower motivation (Deci & Ryan, 1987). On the other hand the study of Fulton et al (2013) finds no difference between perceived autonomy and the amount of deadlines leading to the second research question.

What is the effect of frequent deadlines on student motivation?

Multiple frequent deadlines may improve self-regulated learning.(Fulton et al., 2013; Azevedo, Moos, Greene, Winters & Cromley, 2008)

What is the effect of frequent deadlines on self-regulated learning skills?

Research also indicates frequent deadlines lead to more distribution of learning over time (Fulton et al., 2013).

What is the effect of frequent deadlines on distribution of learning by students?

Design/procedure/invasiveness

4. What is the study's design and procedure? (500 words max.):

Research Design
To answer the research questions a quasi- experimental quantitative research will be conducted at HU university of applied sciences Utrecht. This way the effects of distributed learning with deadlines on motivation, self-regulated learning skills and learning outcomes can be examined. The differences between the control group and experimental group will be reported in a pre post test design. Different characteristics of students were included: prior education, sex and age.

The independent (manipulated) variable being controlled is the presence of frequent deadlines or an end of course deadline. The dependent variables are: Learning outcomes, distribution of learning, motivation and self-regulated learning skills . The big difference in this design compared to typical distributed practice experiments is the nature of practice (Fulton et al., 2013). The majority of laboratory experiments use simple and small tasks that can be practiced repeatedly. Continuous practice of a complex task is also done in research where learners build skills through trial and error. However few laboratory experiments chunk content.

Control condition Learning goals of the course are the same in both conditions The assignments made by students also had to meet the same. Both courses were given in a Blended form where there are face-to-face meetings and online preparation. The additions made compared to the course as it is normally given are online quizzes and knowledge clips. Students were enrolled in eduseries for Beroep 4. In the control condition there were seven different face-to-face meetings. In these face-to-face meetings literature is explained and there is some space for in class assignments. The students had to write a skills-portfolio, persuasive paper and complete online quizzes. The deadline for the skills-portfolio and persuasive paper are in week 8. The online quizzes were weekly and had to be finished before the end of term.

Procedure
To answer the research questions data is gathered through learning outcomes and surveys. Four workgroups of students from HU University of Applied Sciences Utrecht were informed about this study through the online surveys. Students were informed data will be treated anonymously and confidentially. Students that will not agree to participate in this study will have the choice to do so.

Intervention the participants were divided into two groups the control and experimental condition. This means two working groups were assigned to the experimental course and two were assigned to the control group this was done in consultation with the instructors of the course. The experimental course had weekly deadlines for assignments of the skills portfolio. Both the experimental group and control group had online quizzes linked to the knowledge clips and for both groups the deadline of the persuasive paper was the same. For the control group the deadline for the skills portfolio was at the end of the course. Both groups were asked weekly to fill in home much time they spent studying and how many times a week.

The mslq surveys were handed out in week 2 and 9 of the course. In the weeks prior to the course teachers of the course will be informed by the researcher on how the questionnaires will be taken. The questionnaires on distribution of learning over time were taken every week in class.

5.

a. Which measurement instruments, stimuli and/or manipulations will be used?[4]:
A self-evaluation questionnaire is used to test self-regulating skills (MSLQ, Wolters, Pintrich & Karabenick, 2005; Sletten, 2017). There are no risks associated with participation in the study. The amount of time spent on the course and when time is spent on the course will be reported weekly by the students

b. What does the study's burden on the participants comprise in terms of time, frequency and strain/efforts?:

There is a low degree of burden. The Mslq questionnaire will take 15 minutes during pre and post test. The weekly time spent reporting distribution of learning over time will take 5 minutes. The extra deadlines may help to plan course assignments so the research does not have impact on much extra learning time overall.

c. Will the participants be subjected to interventions or a certain manner of conduct that cannot be considered as part of a normal lifestyle?:

No

d. Will unobtrusive methods be used (e.g. data collection of uninformed subjects by means of observations or video recordings)?:
No

e. Will the study involve any deception? If so, will there be an adequate debriefing and will the deception hold any potential risks?:
No

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[4] Examples: invasive questionnaires; interviews; physical/psychological examination, inducing stress, pressure to overstep important standards and values; inducing false memories; exposure to aversive materials like a unpleasant film, video clip, photos or electrical stimulus; long-term of very frequent questioning; ambulatory measurements, participation in an intervention, evoking unpleasant psychological or physical symptoms in an experiment, denial, diet, blood sampling, fMRI, TMS, ECG, administering stimuli, showing pictures, etc. In case of the use of a device (apparatus) or administration of a substance, please enclose the CE marking brochure for the relevant apparatus or substance, if possible.

6. Will the participants be tested beforehand as to their health condition or according to certain disorders? Are there any inclusion and/or exclusion criteria or specific conditions to be met in order for a participant to take part in this study?:

There are no exclusion criteria.

7. Risks for the participants -

    a.   Which risks does the study hold for its participants?.
        There are no risks involved.
    b.   To what extent are the risks and objections limited? Are the risks run by the participants similar to those in daily life?.
        The risks are similar to those in daily life. The research will not increase any risks

8. How does the burden on the participants compare to the study's potential scientific contribution (theory formation, practical usability)?:

Not applicable for this study

9. Will a method be used that may, by coincidence, lead to a finding of which the participant should be informed?[5] If so, what actions will be taken in the case of a coincidental finding?:

No, this is not applicable for this study

Analysis/power

10. How will the researchers analyse the data? Which statistical analyses will be used?:

With an independent T-test and a multivariate regression.

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[5] For instance: dementia, dyslexia, giftedness, depression, extremely low heartbeat in an ECG, etc. If coincidental findings may be found, this should be included in the informed consent, including a description of the actions that will be taken in such an event.

11. What is the number of participants? Provide a power analysis and/or motivation for the number of participants. The current convention is a power of 0.80. If the study deviates from this power, the FERB would like you to justify why this is necessary:

The number of participants will be approximately 80. The reason for this choice is that this will be a convenience sample.

C.   PARTICIPANTS, RECRUITMENT AND INFORMED CONSENT PROCEDURE

1. The nature of the research population (please tick):

      1. General population of students in higher education without complaints/symptoms

2. Age category of the participants (please tick):

- 18 years or older

3. Does the study require a specific target group? If so, justify why the study cannot be conducted without the participation of this group (e.g. minors):

Yes students in teacher education. This is due to the course being given is for teacher education.

4. Recruitment of participants -

    a. How will the participants be recruited?:
       Convenience sample. Students receive oral explanation for participating in the research. In addition, students consent to the use of their data on the basis of the questionnaire.

    b. How much time will the prospective participants have to decide as to whether they will indeed participate in the study?:
       They give consent at the start of the lecture. They can stop participating any time they want to.

5. Does the study involve informed consent or mutual consent? Clarify the design of the consent procedure (who gives permission, when and how). Does the study involve active consent or passive consent? If no informed consent will be sought, please clarify the reason:

The students will give their informed active consent. The participants are age 18+, this means that they can decide for themselves if they would like to participate. They can also decide to quit the research during the process of research. Informed consent forms will be filled in online during the first meeting and ask them if they would like to participate.

6. Are the participants fully free to participate and terminate their participation whenever they want and without stating their grounds for doing so?:
Yes

7. Will the participants be in a dependent relationship with the researcher?:

No, their assignments for example is given by their teachers.

8. Compensation

   a. Will the participants be compensated for their efforts? If so, what is included in this recompense (financial reimbursement, travelling expenses, otherwise). What is the amount?
No

   b. Will this compensation depend on certain conditions, such as the completion of the study?
No

D.   PRIVACY AND INFORMATION

1.

   a. Will the study adhere to the requirements for anonymity and privacy, as referred to in the Faculty Protocol for Data Storage[6]?:
      - anonymous processing and confidential storage of data (i.e. storage of raw data separate from identifiable data): yes
        The data online will be gathered and connected to student-numbers. At the start of the data analysis in SPSS the numbers will be a anonymized.

      - the participants' rights to inspect their own data: yes
      - access to the data for all the researchers involved in the project: yes

   If not, please clarify.

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[6] This can be found on the Intranet: https://intranet.uu.nl/wetenschappelijke-integriteit-facultair-protocol-dataopslag

b.   Has a Data Management Plan been designed?

Yes All data will be saved on YoDa. Yoda is a secure data storage facility provided by Utrecht university.

2.

a.   Will the participant be offered the opportunity to receive the results (whether or not at the group level)?:

Yes at group level

b.   Will the results of the study be fed back to persons other than the participants (e.g. teachers, parents)?:

No the data will be anonymized, results can be interpreted on a group level not on the individual level. Anyone in the results can read the study after it is finished.

If so, will this feedback be provided at the group or at the individual level?

Results are reported on group level. If interested teachers and students can ask for the research of the study after it is finished.

3.

a.   Will the data be stored on the faculty's data server?: yes in a data package containing all the data needed

b.   Will the data that can be traced back to the individual be stored separately on the other faculty server available for this specific purpose?:

Yes

If not, please clarify where will the data be stored instead?:

E.   ADDITIONAL INFORMATION

Optional.

F.   FORMS TO BE ENCLOSED (CHECKLIST)

- Text (advert) for the recruitment of participants
- Information letter for participant
- Informed consent form for participants
- Written or oral feedback information (debriefing text)
- (Descriptions of) questionnaires
- (Descriptions of) measurement instruments/stimuli/manipulations
- Literature/references

Signature(s):[7]   Date and place:

Name, position:

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[7] The senior researcher (holding at least a doctoral degree) should sign here.