eleed
e-learning
& education

Issue 12
2017

Presence and Self-Study in Blended Learning

The Special Role of Presence

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urn:nbn:de:0009-5-45027

Abstract

Comparisons show online courses to be inferior to blended learning courses. Studies of the absence of students from classes as well as time budget analysis of the workload of Bachelor students provide evidence for a positive effect of the face-to-face component of blended learning environments on learning success. Attendance or presence seems to be even more important for the learning success than self-study, which in today's bachelor curricula with their conservative structure and classical teaching methods reduces learning to cramming. This essay presents some evidence for a special role of attendance for learning success and explains the positive effect of face-to-face (f2f) situations through motivation and communication theory, and an analysis of recorded lectures.

Keywords: e-learning; blended learning; workload; attendance in class; motivation of students; determinants of learning success; importance of communication; Arbeitsbelastung, Anwesenheit in Lehrveranstaltungen; Motivation der Studierenden; bestimmende Faktoren des Lernerfolgs; Wichtigkeit der Kommunikation

1 Blended Learning

Universities are always under pressure to prove that a new method is better than the old one. Consequently, there are thousands of reports on media experiments and comparative evaluations of online courses and face-to-face (f2f) courses. Thomas Russell (1999) summarized the results in his book, "The No Significant Difference Phenomenon", which recorded more than 300 studies on media use in classes in the 90s. Some studies show significantly positive results for online learning, while others show significantly positive results for face-to-face or hybrid lectures. Russell stressed that empirical research could not be used to prove that a particular method of teaching or learning is in principle superior to others.

Comparative evaluations of individual courses in the pedagogical field are due to methodological and didactical reasons not as controllable as randomized experiments with control groups or placebo interventions. Comparisons of methods cannot be generalized beyond the individual case. Due to the absence of generally accepted criteria for the description of the didactic and methodological aspects, different cases cannot be compared. This impossibility of comparative evaluations has been described in Schulmeister (1978) from a methodological point of view. It results from the fact that the variables to be compared can never really be kept the same, and that the necessary "high-level differentiation in the variable range" (Schulmeister, 1978, p. 7) cannot be controlled empirically. The number of intervening variables is infinite, while only a small selection can

be included in the study (Schulmeister, 2007, p. 386). Even meta-analyses come to different results based on the respective selected criteria (e.g., Shachar et al., 2003 versus Cavanaugh et al., 2004; Bernard et al., 2004).

Nation-wide evaluations of online courses and hybrid courses (Xu & Jaggars, 2011a und 2011b; Jaggars & Xu, 2010 and 2011) show a higher drop-out rate in online courses. Especially, students who would need more support in learning are more affected (Jaggars, 2011). These results contradict the meta-analysis of Means, Toyama et al. (U.S. Department of Education, 2009) (see Jaggars & Bailey, 2010; Figlio et al., 2010). It is true that their method of evaluation can only be used to compare "hard" measurable data such as attrition, absenteeism and performance regardless of the design or the quality of the courses, but the analysis of mass data renders differences visible. Thus we know at least that f2f courses and hybrid courses are more successful and particularly weaker students benefit from them, although we do not know why this is the case.

Blended learning becomes accepted even where people initially believed in online learning only. Twenty years ago, many people intended to add a virtual component to f2f courses or even replaced f2f courses through completely virtual courses and so-called Virtual Universities. Around the Millennium Turn I registered about 180 newly founded Virtual Universities (Schulmeister, 2001) that were abandoned three to five years later after burning a lot of investment capital. A few years after the sudden rise of MOOCs, a similar process seems to happen: Since MOOCs have an extremely high drop-out rate, a low participation in forums and a very small number of people taking examinations, Udacity, on April 20, 2016, has announced the launch of Udacity Connect and motivated it this way:

> „We ran a pilot program a few months ago that showed encouraging signs. Students who combined their online education with face-to-face study sessions were more engaged in the program. Compared with similar Nanodegree students who did not participate in the pilot, UConnect students had a 30 percent increase in project submissions and were three times more likely to complete their Nanodegree program. The goal setting, group accountability, personalized mentoring, and social interactions with others galvanized students to move faster and be more vested in their education.“ (http://www.udacity.com/uconnect)

This new turn has been positively commented on by the communication psychologist Sherry Turkle (2015) as an irony of history:

> „An irony emerges. Research on MOOCs, the pedagogical form that was hailed because it offers so much to measure, shows that they work best when they are combined with the least measurable element of a traditional classroom: presence.“ „For it soon became clear that online learning works better if you also increase the amount of face-to-face contact between students and faculty.“

Presumably, the assumption that quality in teaching depends on communication and interaction between learners and teachers, and that the discourse on which the reflection of science builds does not really work in virtual space, pushes the trend towards blended

learning. Hybrid teaching forms are meant to combine the best of both worlds. But the truth of this assumption has never been proved. "Digitization shows us that we do not yet understand the effect of face-to-face teaching," says Jörn Loviscach (2016).

Presence seems to have a special, so far little explored, effect on learning. Based on data and research results of recent projects, the workload analyses in the ZEITLast project (Schulmeister & Metzger, 2011; Schulmeister, Metzger & Martens, 2012), the analysis of 300 international empirical studies on determinants of study success (Schulmeister, 2014) and the analysis of 300 international empirical studies on attendance of students in lectures and courses (Schulmeister, 2015), I would like to trace this "secret" effect of the presence. Some hypotheses are well supported by empirical evidence, e.g., the fact that presence really works (see Chapters 2-5 of this paper). But for the question considered here, the way presence works, I am still dependent on circumstantial evidence from investigating recorded sessions and tentative deductions from communication theory (see Chapter 6).

2 Workload and the ZEITLast Project

In the first publication on the ZEITLast project (Schulmeister & Metzger, 2011), only 18 samples from bachelor study programs, whose workload and private time were collected with a time budget, were reported. At the end of the project, 27 samples were collected. To date, 41 samples have been collected. Not all surveys could be carried out over the full period for tactical or logistical reasons. I therefore refer to at most 35 samples.

Each sample consisted of a semester cohort within one subject. Atypical for classical time budget studies, the students were asked to enter data daily over a five month period. The reason for this huge time span is obvious: the days of students are never the same; use of time differs considerably during the lecture period of 14 to 16 weeks, also during the examination phase and the lecture-free weeks at the end of the term. Assignments and study behavior vary from day to day and during the semester. For these reasons, we decided to accurately measure the workload.

Indispensable for a time budget study is the precision of the survey categories and the daily control of the entered data. The data captured provide us knowledge about millions of hours and how they were spent. Workload was categorized into attendance, self-study, organization etc. Private time was categorized into holidays, jobs, further education, illness, etc.

Why are exact empirical data important? If you want to know whether the ECTS values in the module manuals are met, whether the students are overloaded, whether paid employment is an obstacle to studying, etc., then it is helpful to have measured data of time and activities to reject or accept assumptions and hypotheses.

An example of a naive assumption illustrates this argument: Dräger et al. (2014) assume: "DNA of generation Y is more collaborative: students solve tasks today rather in a team than alone". This rhetoric is refuted by empirical data: Group work accounts for less than 10% of the workload. Students do not prefer group work to individual self-study.

Testing normative hypotheses requires a solid basis of empirically measured data (Creswell, 2003), e.g., workload, self-study and attendance, since time data collected by interviews and self-reports are distorted by retrospective questioning, inaccurate memory, subjective estimation and social desirability. Time budgets collected over a long period of time allow for almost a non-invasive method of data collection.

The workload (Fig. 1) accounts for just 15 percent of the students' total time, private time, leisure and vacation amount to 42 per cent. Paid work consumes significantly lower time than reported by surveys. The mean workload per week of most samples varies between 21 and 27 hours (median 24). Only a few samples show an average value of less than 21 or more than 27 hours per week. If we calculate only the data of the lecture period, the mean value is still below 30 hours. In samples in which students study more than 35 hours per week during the lecture period, students do not study the last six to ten weeks at the end of the semester.

Mean values are not very meaningful. The median merely states that 50% of the subjects' scores are below the middle and 50% above, thus a median of 24 hours a week indicates that our idea of the Bologna bachelor architecture is not met by reality. Moreover, the time-budget method reveals that one half of our bachelor courses require less than half of the expected study performance and the other courses demand only little more. Some other international studies share this insight (Schulmeister, 2014, table 2, p. 97ff.).

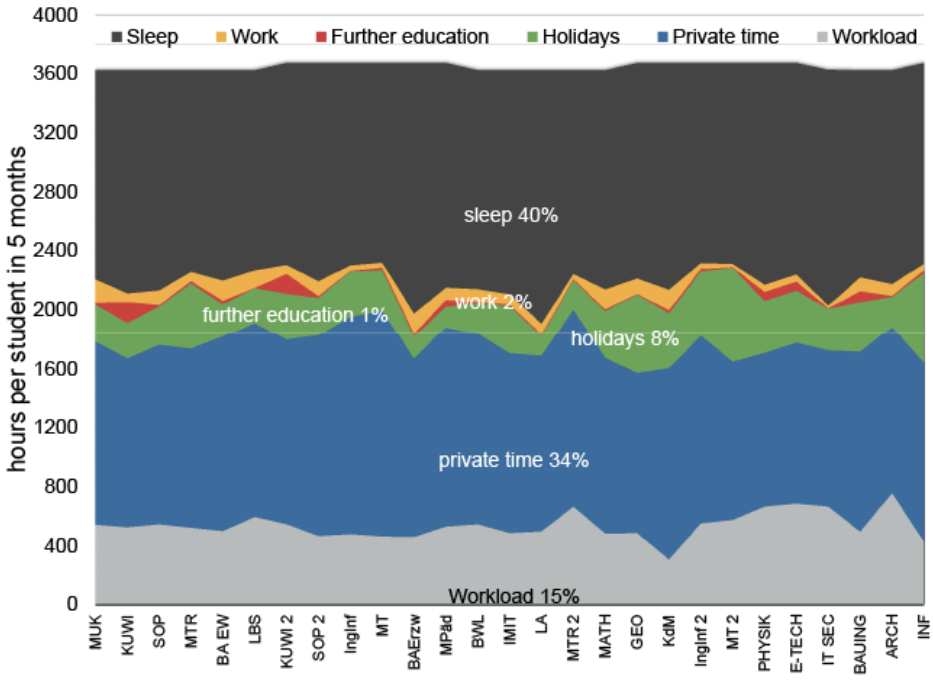

Fig.1: Aggregated data of 27 samples

More exciting is a look at the range of the data (see Fig. 2). The workload varies from 8 hours to 60 hours per week. The span is relatively narrow in some samples, and extremely wide in others. The standard deviation of attendance in some samples is less than one

hour per week, in others more than 4 hours per week. The standard deviation of self-study varies between 3 hours per week and almost 7 hours per week. The span is even greater when calculated for individuals and not just for the whole sample.

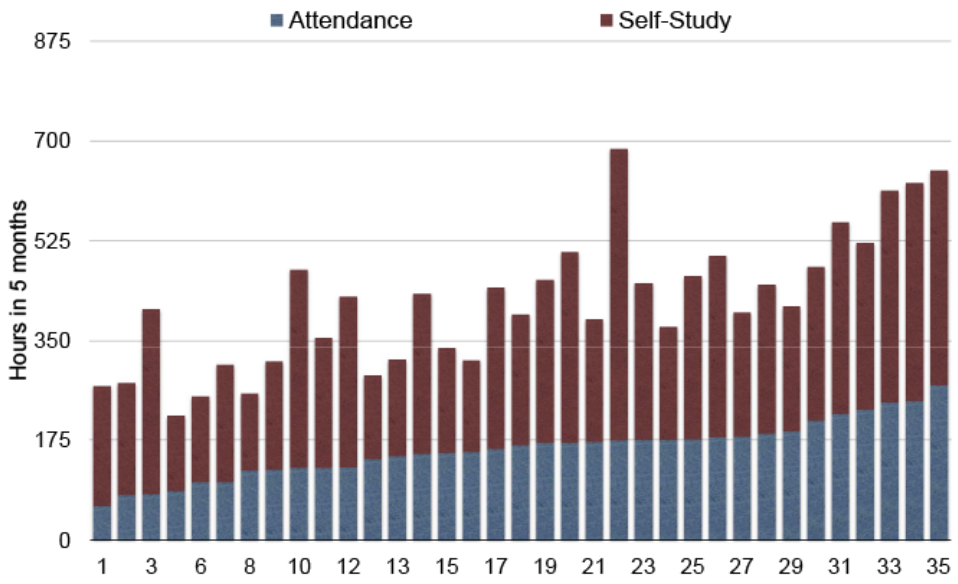

Fig. 2: Attendance and Self-study in 35 Samples

In samples for which we were able to obtain examination grades, we find no, or only a small, correlation between workload and exam results. After differentiation of the workload in attendance and self-study, however, we find low correlations between self-study and grades, but higher correlations between attendance and grades (see Table 1). If both variables have ascending or descending order (e.g., low study time and low number of test points; high attendance and high number of test points), the correlation coefficient is positive, if one of the variables follows another direction, then the coefficient is negative (e.g. low attendance and high=worse grades; high study time and low=better grades). Higher correlations for attendance are an indication that presence is more important for the examination success. However, I cannot rule out that this may vary depending on the subject and whether the self-study component of the teaching organization has been innovative (e.g., problem-based, project-oriented). The samples we have are relatively conservative in this respect.

Self-study		**Attendance**	
Business Administration			
Self-study & grades	r = 0.03	Presence & grades	r = – 0.32
Mathematics			
Self-study & exam points	r = – 0.16	Presence & exam points	r = 0.48
Self-study & points in assignments	r = – 0.08	Presence & points in assignments	r = 0.62
Computer Science			
GP2: Self-study & grades	r = – 0.22	GP2: Presence & grades	r = – 0.55
GPS: Self-study & grades	r = – 0.02	GPS: Presence & grades	r = – 0.40

It is not far-fetched to assume that students organize their self-study very flexibly. However, not only self-study is a variable quantity, but also attendance. Therefore one should not assume that the use of time for one week holds for the whole lecture period. The students' attendance, for example, in business administration, varies between 100 and 250 hours during the lecture period, and the standard deviation varies from 4 to 7 hours per week per student. The students' self-study in business administration varies between 138 to 956 hours in five months with a standard deviation of 4.5 to 16.5 hours per week. The assumption that the examination regulations or the module manuals will ensure a uniform or constant attendance is wrong. The considerable margins in individual and inter-individual data are an indication of heterogeneity among students, which cannot be due to external factors, but is obviously a consequence of individual study behavior. Regression analyses of the correlative relationship of attendance and learning success point to study behavior as the determinant of the learning outcome (Credè et al., 2010). In order to be able to explain why attendance and not self-study has such an effect on study behavior, I decided to examine the attendance of students more closely in another study (Schulmeister, 2015).

3 Attendance of Students in Class

A search for attendance in lectures or courses resulted in 300 international studies, of which 158 studies deal with the correlative relationship between absence and examination performance, and prove that absence leads to poorer performance, increasing with the amount of absence. The absence rates in the studies vary between 25 percent and 50 percent. Except for nine, all other studies conclude that the grades are declining with growing absence, or that the absence rates of students with poorer grades are always higher. Studies that differentiate their data according to the degree of attendance (e.g. Jarrio, 2009, N = 2.271) or according to grades and course level (e.g. Durfee et al., 2013, N = 1.600) prove this relation. Experimenting with changing the policy of attendance (Kooker, 1976) shows a definitive effect in either direction.

The assumption that students who miss lectures are predominantly self-determined students is not true. Students with good performance are usually present on a regular basis; the majority of students who are dropping lessons are weaker learners. In this respect, an attendance policy or monitoring might benefit especially weaker students (Dickson & Stephens, 2016; Richter, Durfee et al., 2013, Credé et al., 2010; Dobkin et al., 2010).

The assertion that students are substituting absence through increased self-study via Internet, is clearly disproved by time-budget data from many study programs. The sample from the summer term of 2015 (Fig. 3) presents a distribution of the students' attendance and self-study data, typically for almost all samples. The attendance data are displayed in ascending order. If the sample is divided at the median and the values of attendance and self-study above the median are set equal to 100 percent, then attendance below the median amounts only to 56 percent and self-study to 31 percent of the upper half of the sample, even though no student reached the intended level. Frequently absent students show a low amount of self-study, but instead an enormous proportion of private or leisure time. In many samples such data provide a proof that often absent students usually do not intensify their self-study.

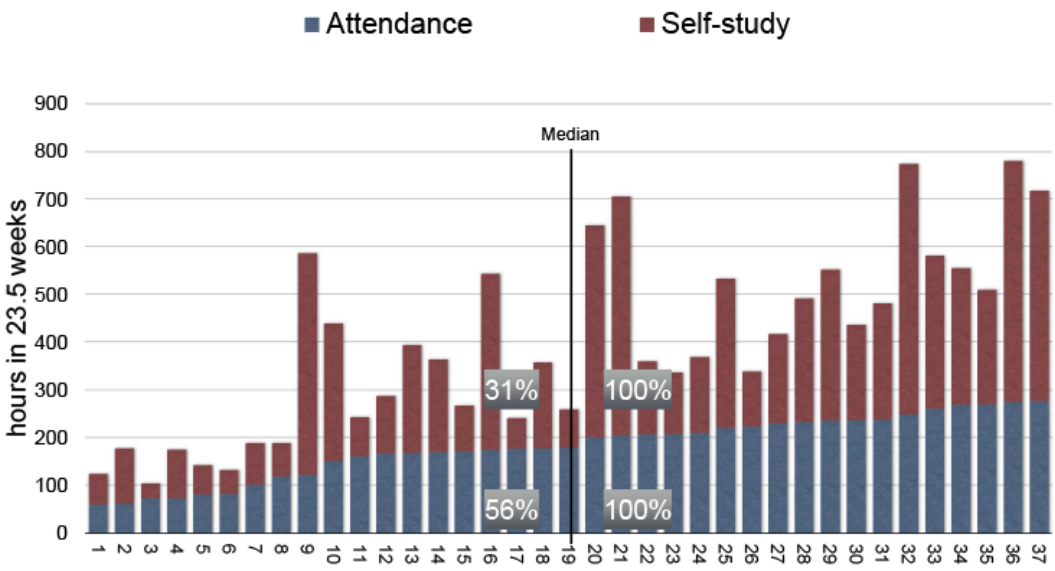

Fig. 3: no substitution of attendance by self-study

Studies on attendance and absence, which check whether and how often and how long online available learning materials are used by students, come to the same conclusion. It are the students who are almost always present who are more likely to use online materials (e.g. Konsky et al., 2009; Morris & Chikwa, 2014; cf. Schulmeister, 2014), while the self-study data of absent students are as low as their attendance data. Instead, their share of leisure time increases enormously. There is no substitution of attendance by self-study. As already explained, correlations between attendance and grades are significantly higher than between self-study and grades, which again emphasizes the function of presence for learning.

48 studies deal with justifications and excuses of students for their absence. Most studies take the stated reasons prima facie as true. In some studies, however, students were asked to characterize their excuses as real or invented (Schulmeister, 2015, pp. 37ff.). They marked approximately 50 percent of their excuses as lame excuses, which were presented with the intention of gaining more time for deferred assignments and examinations (procrastination). If students are asked about the reasons for their absence, a minority of students who are often absent criticizes the quality of teaching. The blame serves as a defense mechanism, which is supposed to protect the threatened self-image (Schulmeister, 2015, p. 39ff.).

What to do? This question is almost always discussed dichotomously: obligatory attendance versus no control of attendance, self-determination versus paternalization, insisting on having to do with adult students versus acting pedagogically, etc. However, there are clear indications from research that there is sufficient room for strategies between these false alternatives to achieve a higher degree of presence and at the same time offer support to weaker and less motivated students: Already addressing the topic at the beginning of the course leads to 10 per cent higher attendance. An attendance monitoring without sanctions effects even more. A study by Dickson & Stephens (2016) presents an example of effective intervention through feedback and without sanctions. A monitoring of attendance can serve as an early warning system of risk students. After only a few weeks,

it is possible to identify who will probably not successfully complete the term, so that they can be approached with advice and guidance: „To be meaningful and consequential for students, our findings suggest, ‚college for all' policies require that higher education institutions focus as much attention on monitoring and ensuring that undergraduate learning occurs as elementary and secondary school systems are currently being asked to undertake." (Arum & Roksa, 2011, p. 55) A credit point monitoring can indicate students who fall behind the age cohort: "Through monitoring, chronically ill or suddenly sick students can be helped at an early stage and may be saved from the loss of a term, risk students can be identified and asked to look for psychological counseling, etc. Without monitoring, we give away these chances." (Schulmeister, 2015, p. 50)

In the case of frequently absent students, there is a gap between the entitlement of self-determination and the reality of the student's study habits. From a psychological point of view the unfounded ideal of adult learning encounters a factual study habit that does not meet the idealized claim.

A decline of performance due to absence is also found in synchronous online courses (web conferencing) and a lack of participation in asynchronous learning environments (see Stover et al., 2013, Douglas & Alemanne, 2007, Raposelli, 2014). Particularly interesting and up-to-date in this context are experiments with MOOCs and the Inverted Classroom model. What do we know about the attendance of students in the presence component of this blended learning method?

Jürgen Handke (2016) has become widely known for his experiments with the Inverted Classroom Model (ICM). He analyzed the attendance in the f2f part of the Inverted Classroom and recognized: Students who attended the f2f sessions were significantly better in the final examination than those who did not attend or were only seldom present." „The effectiveness of the presence component in the Inverted Classroom (Mastery) model is out of question." (p. 39) Andrea Breitenbach (2016) used the ICM for a statistics course. She also concludes that regular attendance leads to better grades: "This shows the enormous importance of the presence phase and its revaluation by the ICM" (p. 95). For an ICM, the same applies as for any other f2f event. In this context, the study by Tillmann et al. (2016) is worth mentioning. Students completed a test on procrastination and their use of recorded lectures was investigated. The inclination to procrastination is more pronounced among students who are less likely to attend the class, or who only look at parts of the recording after a missed class, and the highest procrastination value is shown by those 16 percent who do not use eLectures at all. The study shows that digital recordings of teaching, which are intended to make the self-study more flexible, do not fulfill this function for many students. Similar studies show that an offer of recorded lectures leads to a reduction of attendance (Traphagan et al., 2010, Jensen, 2011, Drouin, 2014) and an increase in the students' tendency to procrastinate.

Presence in the study program means attendance. But not everyone who is present in class is present in the sense of attentive. More than 100 studies on the private use of mobile phones or laptops during class indicate a decline in performance caused by diversion (e.g. McCoy 2013, 2016; Sana et al., 2012; Duncan et al., 2012) and causing negative effects for memory and cognitive performance. Students who do not use media in class have 10-17 percent better test results, remember up to 70 percent more, and write

better notes (e.g., Kuznekoff et al., 2013, 2015). Negative implications for communication and empathy were identified, especially with minority students and students with weaker performance in earlier semesters (Przybylski & Weinstein, 2012, see Figlio et al., 2010).

A randomized experiment with control groups was conducted in over 50 seminars at Westpoint Military Academy (Payne-Carter, Greenberg & Walker, 2016): There were two conditions with random allocation (laptop free, iPad open) and control groups. The performance in groups in which students used computers for learning were 18 percent of the standard deviation worse than that of the control group. The groups in which iPads were used show the same result as the groups in which computers were used.

Many studies on the absence of students from class recognize a much higher loss in the performance ratings for absent students than for students who are temporarily distracted by private media use. Depending on the degree of absence, the study found differences of 30 percent of a grade (Fidanza, 2006) to more than one grade (see Schulmeister, 2015). In the case of media use in class, the drop in performance does not appear to be as serious as in the case of the absence of students. Is it legitimate to conclude that temporary distraction is still better than complete absence? Is there any evidence that attending students have an advantage over absent students despite being distracted by facebook, IM or eMail? Why?

An explanation of these results could be that at least the attention of the diverted students is directed at the lecturer by means of teaching. Is it the impossibility of not communicating (Watzlawick et al., 1969), which always calls attention again? Or is it the interpunctuation of the speaker, which does not miss its effect on the students? These thoughts bring me back to the question what the effect of presence may be. In order to get closer to the answer, I would like to briefly introduce another argument and address the heterogeneity of the students, because most of the statements that can be made about student behavior are never valid for all.

4 Motivation of Students

All these data, whether related to workload, attendance or self-study, show that students differ in their real study behavior. This type of heterogeneity is motivational. We have analyzed the motivation of students with the Integrated Learning and Action Model (ILHM; Martens & Rost, 1998; Martens, 2012) in four subjects with samples between 200 and 500 students: Computer Science, Business Administration, Mechanical Engineering and Education Science (2x) (Schulmeister, Metzger & Martens, 2012; Metzger, Schulmeister & Martens 2012; Martens, Metzger & Schulmeister, 2013). The ILHM tests variables that determine the student's volitional behavior and yields cluster of motivational profiles that describe differences between the students.

The model of the ILHM distinguishes three phases: the formation of a motivation, the intention to learn, and volition. At the beginning of learning often stands the perception of a discrepancy between the requirements and the own state, resulting in a kind of threatening anxiety. Can the students deal with the pressure (sensitive or repressive coping) and can they take responsibility? If learning tasks are perceived as being externally prescribed, learning maybe impaired (positive extreme: self-congruent target tracking), students may

exhibit an inclination to be distracted (positive extreme: concentrated and disturbance-free learning), negative feelings may keep them from learning, and assignments may be postponed (procrastination).

A latent class analysis results in four or five clusters with different profiles that describe the actual study habits (for a more extensive description, cf. Martens & Metzger, 2016): Self-determined learners are opposed to learners with an avoiding (recessive) and anxious motivation. Students differ most clearly in the scales of distraction tendency, emotional regulation and procrastination. Between self-determined and recessive learners, there are two groups of students to whom we attribute a strategic or pragmatic motivation. The results of the class analysis were similar in all four subjects; they vary only in the respective size (percentage) of the clusters.

Although the workload did not show any correlation between the amount of time and performance (as argued in the beginning of the essay), a significant correlation between workload and attendance could be observed after differentiating between attendance and self-study. Now, after another differentiation of the sample by motivation, differences in time use of the profile groups are discernible: self-determined students need less time for better performance, anxious learners need more time and still achieve less good results. It can be concluded from this that not the amount of time plays the most important role for learning, but the modality of learning, the factual study behavior, "the degree and quality of self-regulatory processes" (Hollowell et al., 2013, p. 89).

The proportion of anxious and recessive learners is quite high with 35-40 percent, the proportion of self-determined learners is with 15-25 percent much smaller. Not all students act responsible in case of imminent examinations. When looking at a difficult text book, negative emotions cause many students to seek distraction and to postpone upcoming assignments, in short, to avoid learning. Among anxious students, however, there are some who invest much more time in learning than others, but do not perform better due to low self-control and inadequate learning strategies. The key question is: How do I deal with fear and negative emotions? Do I accept the responsibility, do I learn persistently, or do I yield to distractions and procrastination?

One recognizes how awfully "effective" procrastination is, if one looks at the curves of time spent in self-study during the term for samples, in which tests are written immediately after the lecture period (Fig. 4). These curves illustrate the development of time spent in self-study. In the lecture period less self-study is done, in the examination phase it is tried to catch up on all the missing and deferred assignments in a few days, which is not very useful from the point of view of learning psychology because it is limited to memorizing, is not sustainable and does not foster understanding of concepts and relations. Such curves can be found in almost all samples studied, but not in courses in which written homework is required.

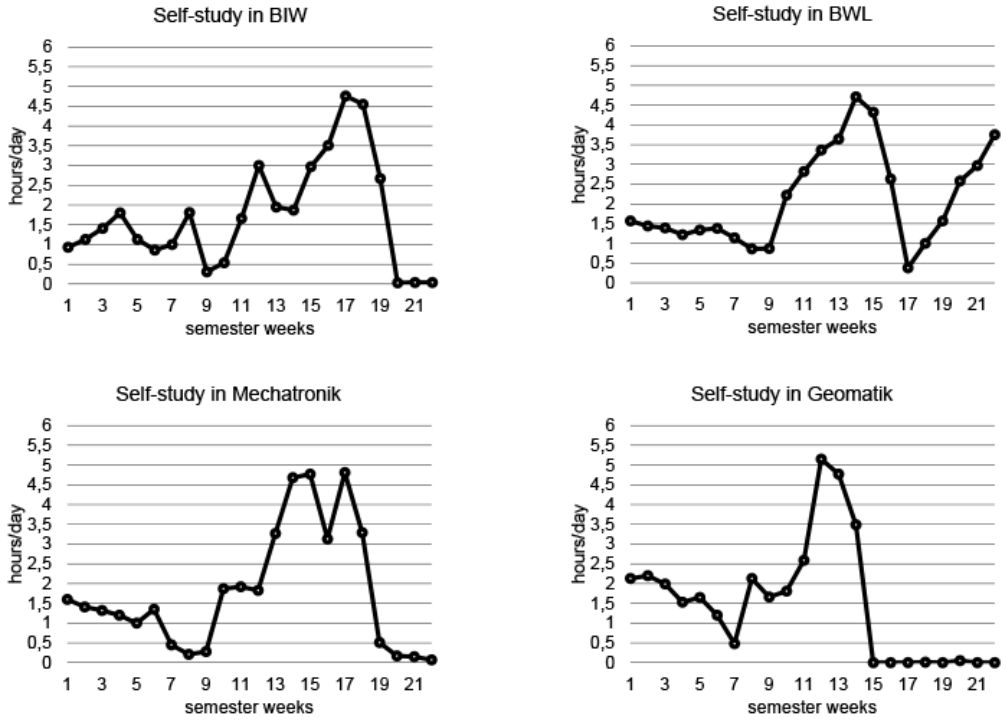

Fig. 4: Process of self-study in four samples

With the psychological analysis of motivation, I have identified some variables that may be responsible for learning success, especially the individual study habits. To secure this insight, I have analyzed further 300 international studies (Schulmeister, 2014), which investigate determining factors or predictors of learning success and offer empirical findings on study habits.

5 Determinants of Learning Success

In studies on predictors of learning success, we find exactly the same variables of study behavior, which we have already discovered through motivation analysis: The success criteria are, above all, the attendance in class and the study habits, e.g., concentration in learning, disturbance-free learning environment, regulation of negative emotions, persistence in the face of difficulties and effective learning strategies. Particularly important is the attitude of conscientiousness, a dimension from the psychological inventory of the five-factor model (FFM, also called Big Five). Conscientiousness consists of five facets: competence seeking, orderliness, sense of duty, aim for achievement, and self-discipline (Credé & Kuncel, 2008, Schulmeister, 2014). Distraction and procrastination have a negative effect on learning success.

The study behavior is moderated by the teaching organization, which restricts the lecture period to only 14-16 weeks although a semester consists of 26 weeks. The teaching organization defines the type, the rhythm and the scope of the courses offered, and the

type, frequency and dates of examinations. The difference between the two next diagrams illustrates the effect of the teaching organization, which leads to a different distribution of the workload (Fig. 5).

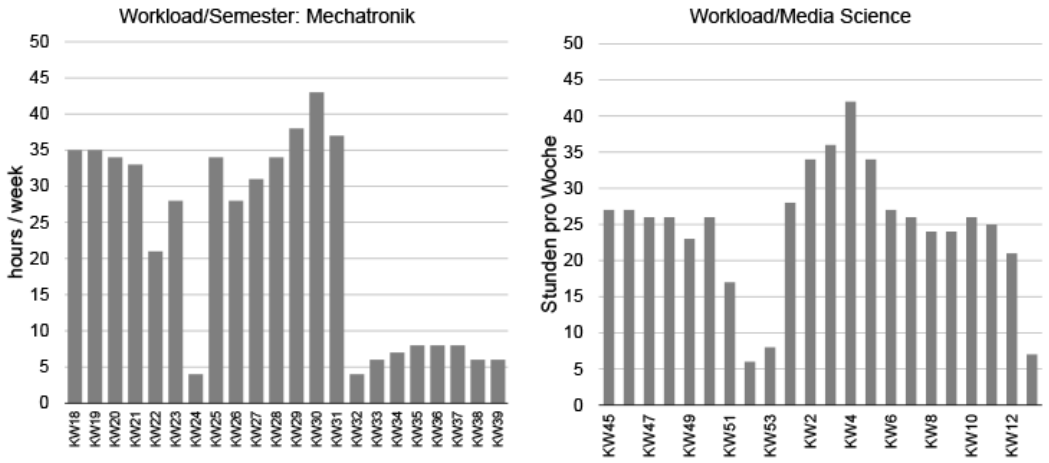

Fig. 5: Impact of teaching organization on distribution of Workload

The sample on Mechatronics was evaluated in a summer semester, from calendar week 18 to 39. While the workload initially is higher than 30 hours per week, it is only 6 hours per week during the last eight weeks of the term. After the examination (week 30), almost nothing takes place for eight weeks. The sample on Media Science was evaluated in a winter semester, from week 45 to week 13 the following year. During weeks 52 to 54 no lectures took place. The weeks after the exam were devoted to the preparation of writing essays. While the workload during the lecture period is lower, it remains the same until the end of the term due to the homework. The examination mode is different in both subjects. These differences illustrate the way the teaching organization influences the study habit of the students.

The workload in the samples collected by the ZEITLast project is somewhat higher during the lecture period than the semester average (but usually less than 30 hours a week). In courses in which no lessons are offered nor assignments are asked for six to ten weeks after the exam week, the difference between the lecture period and the non-lecture period is extreme. The design of these "empty" weeks or an integrated design of the 26 semester weeks would be a meaningful task for the teaching organization.

Is it not possible to organize the weeks after the examination phase better than many study programs do (e.g., for teaching blocked modules, project study, excursions and internships)? A frequent argument against lectures during the entire term claims that students need the holidays to secure their living costs. This claim is disproved by the empirical data: Only 7 percent work more during the last two months of the semester, but even then only for one or two weeks. Immediately after the examinations, "holiday" is the preference of most students (see Fig. 6).

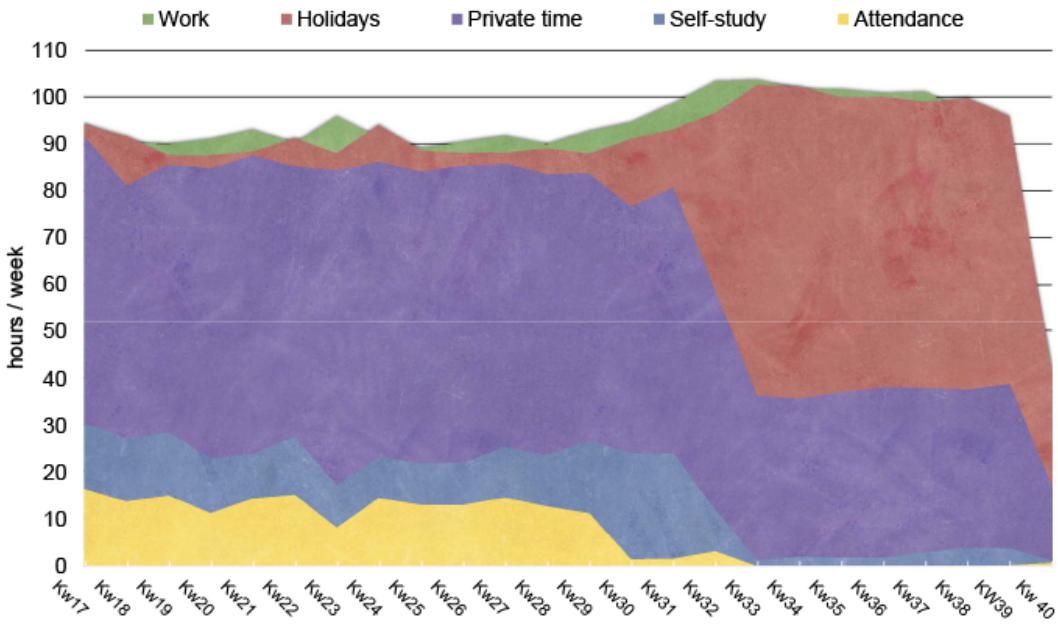

Fig. 6: Private time and and holidays in a sample 2015

Motivation and, above all, conscientiousness are the dominant factors that influence the students' behavior (Credé & Kuncel, 2008; Schulmeister, 2014). Students' study habits are moderated (Fig. 7) by the weekly rhythm and scattered distribution of lectures and classes, the number and type of examinations and the vacant weeks at the end of the semester. The teaching organization has a more direct impact on students than self-study, for which more time is available and a more flexible time distribution is possible. This provides another evidence of the special role of the presence.

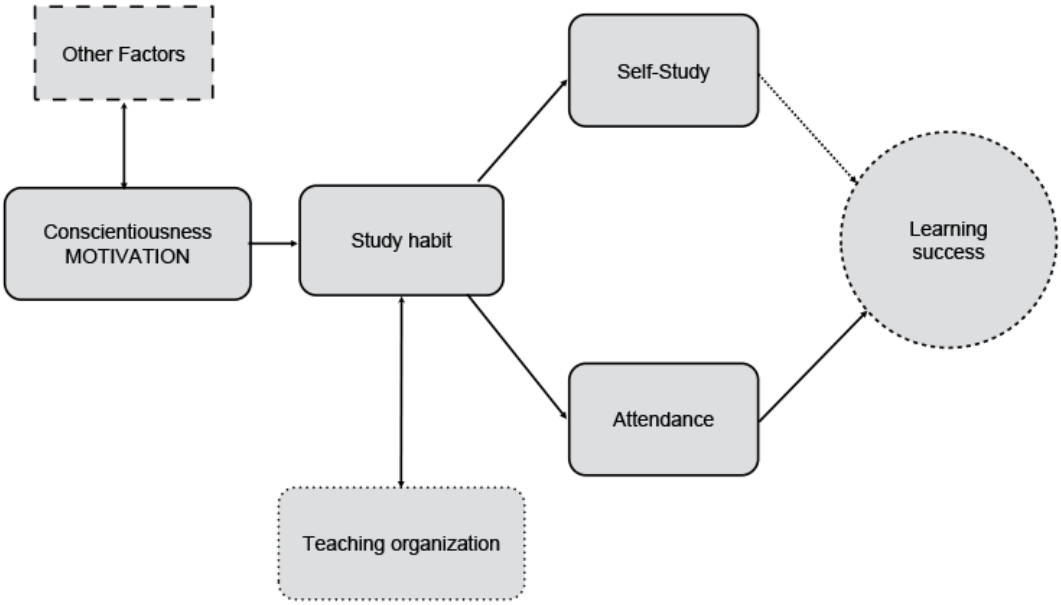

Fig. 7: Variables with impact on learning

6 The Importance of Communication

First-semester reform concepts in universities often rely on effects of socialization in the assumption that they contribute to the relationship and retention of students: it is hoped that the experience of campus culture has a positive effect (e.g., Tinto, 1975, Pascarella & Terenzini, 1991, Braxton, 2000). Lectures, exercises, and tutorials allow contact with one another and the teacher (e.g., Kuh et al., 2006). Psychologists stress the involvement in the peer group and the chance to win friends (Deci & Ryan, 1993). In class, many students have the opportunity of social comparison (Festinger, 1957; Meta-Analysis of Dijkstra et al., 2008) and the acquisition of social rituals (e.g., Goffman, 1959). The development to the adult is not yet complete; this applies to both the moral development (Kohlberg, 1974) and the development of political judgment (Perry, 1970).

All these socialization factors are largely researched and well known. However, they cannot explain the effect of presence on study success. To me, this seems to require a further line of argument. In f2f situations, the focus is on communication, listening and speaking, attention, observation and participation. To examine this aspect of presence, I would like to employ results of communication research.

Nonverbal Communication

The research on the impact of communication in the classroom is rather old, dating back to the 1970s. Communication during teaching was at that time the main object of research, but the focus was on the impact of teacher training and the effects of teaching strategies. With respect to the effect of presence on learning success, there were at most indirect indications.

I have looked at a whole series of recorded lectures made available by some universities in publicly accessible video databases. It is a very interesting, partly amusing, sometimes annoying pleasure to look at these examples, regardless of whether they come from a German, European or American environment. From the consideration of many teaching examples, two aspects have emerged that allow us to demonstrate the function of communication in f2f situations, the role of non-verbal communication and the immediacy of communication.

An example of non-verbal communication in a lecture:

> The lecturer has designed a two-column slide on the criteria of media use, which have been topics in the previous hours of the lecture. He leaves the lectern and moves to the presentation, points to the column with the criteria that are important for the assignment, gesticulates with upwards open hands as if he weighed heavy objects. He returns to the podium and explains the criteria. He speaks to the students present, some of whom are obviously not attentive. He says: "on the right side are the factors with which research is concerned, regarding the explanation of situative media use, meaning whether people at a particular moment, as you are now, one or the other of you, roaming in Facebook or in any eMail program, so as in this situation, how it comes about, this includes situational frameworks, boring lectures, for example, social contexts or attendance policy which are occasionally still in place …" (Uwe Hasebrink, https://lecture2go.uni-hamburg.de/veranstaltungen/-/v/19247 , 19.04.2016, Transkript, RS).

This action well illustrates the factors that have been shown to be effective in the studies of Richmond, Gorham & McCroskey (1987, p. 586/587): “Vocal expressiveness, smiling at the class, and having a relaxed body position appear to be most important, and looking at the class (instead of at the board or notes) and moving around the classroom rather than standing behind a desk or podium also seem to make a meaningful contribution.” Non-verbal actions attract the attention of the students, probably also of those students who were still dealing with Facebook, SMS or e-mail. They look up for a moment and perceive what will help them later in the exam preparation, the criteria of the situational media usage, which will occur in the assignment. The lecturer ensures attention and conveys the relevance of the content for the exam. Non-verbal actions, the analog communication according to Paul Watzlawick et al. (1969), achieved attention and influenced the relationship with the teacher.

Non-verbal actions also involve the voice and the modulation of speech, although usually the term only means the facial gestures, the gestures, and the body movements. The effects of non-verbal communication are above all to

- ensure attention,
- provide feedback on behavior,
- support transfer of meaning, and
- support lexical retrieval.

The focus of non-verbal communication, which I have described as the "secret" effect of presence, obviously aims at securing attention and imparting the importance, weight, and relevance of certain information that could be important for learning and exam. Non-verbal behavior causes an effect in the learning group. Voice and movement signal even to inattentive students what is important for the exam. Experiments with markedly different non-verbal behavior lead to an increase in attention and memory knowledge in short-term memory. "Greater use of nonverbal immediacy cues are associated with greater short-term recall of course information." (York, 2015, p. 2)

Non-verbal communication is connected to a phenomenon which is called the immediacy of communication.

Immediacy of Communication

Do you remember "teleteaching"? The lecture of one university, which is delivered at a certain time, is broadcast by video transmission to a distant university and viewed by students at that place at the same time. There were such attempts in Germany in the nineties, which were transmitted via dedicated lines of the Telekom (Effelsberg, 1995). A recent study by Figlio et al. (2010) tests a similar experimental design with a lecture recording:

The study demonstrates the effect of the immediacy of communication in an experiment in which the lecture is viewed live in a lecture hall or online and on demand. The experiment comprised the lecture. The whole course was hybrid and consisted of many internet applications. 327 students were randomly assigned to the face-to-face situation or the online version. In terms of content both modes were identical. However, attention, concentration and endurance were found to be lower in the "cold" medium, the screen, than in the "warm" medium, the human lecturer. The participants of the face-to-face situation achieved better test results. This effect may be explained by the construct of "immediacy of communication" as proximity to the speaker and the possibility of a direct reaction. For example, in an experiment with three groups of undergraduates (live TV, remote TV, and traditional classroom) Bacon & Jacovich (2001) found no differences in performance between undergraduate students, but a low and significant preference of the face-to-face situation, a higher attendance of the traditional classroom group, as well as variables, but a low and significant preference of the face-to-face situation, as well as variables, that „illustrate the continuing need to work toward distance learning solutions that include both high tech and ‚high touch' […] components" (s.a. Jensen, 2011).

The immediacy of communication (see Richmond & McCroskey, 1992) facilitates

- emotional attachment to teachers,
- identification with teachers,
- learning from models, and
- "cold" versus "warm" media.

A teaching example for the immediacy of communication through non-verbal behavior:

> The lecturer asked a question, he stood calmly and serenely in front of the group, silent, his hands, openly interlocked, making a gesture, looking around slowly, reaching for the round, reaching for the water bottle, drinking, continues to look at the participants, his view wants to establish proximity, strengthen trust and thus reach participation; There is an answer, he nods with the head as a sign of approval, he reinforces it by frequent nodding.
>
> (Rolf van Dick, https://electure-ms.studiumdigitale.uni-frankfurt.de/vod/clips/twKa6nCPzM/quicktime.mp4 ; 29.01.2014)

This non-verbal sequence illustrates an axiom of Paul Watzlawick et al. (1969): "The nature of a relationship is due to the punctuation of the communication processes on the part of the partners." It is important to note that "the activation of mental systems as well as the exchange of information between them are characterized by moods and emotions (expressed scientifically: by affects)." (Julius Kuhl, 2016)

According to Sherry Turkle (2015), face-to-face communication is a very special human trait that assures the human ability of empathy: „Face-to-face conversation is the most human —and humanizing— thing we do. Fully present to one another, we learn to listen. It's where we develop the capacity for empathy." Several studies, sometimes with very large samples, show that the proportion of narcissism is increasing, while the degree of empathy is decreasing (Twenge, 2006, Konrath, O'Brien & Hsing, 2011). From two experiments by Przybylski & Weinstein (2012), it is clear that the mere presence of mobile telephones strongly affects face-to-face communication: „the mere presence of mobile phones inhibited the development of interpersonal closeness and trust, and reduced the extent to which individuals felt empathy and understanding from their partners." Parallel to the slightly increasing narcissism, the degree of empathy decreases, especially since the spread of digital media: „Empathic Concern was most sharply dropping, followed by Perspective Taking. The IRI Fantasy and Personal Distress subscales exhibited no changes over time. Additional analyses found that the declines in Perspective Taking and Empathic Concern are relatively recent phenomena and are most pronounced in samples from after 2000." (Konrath, O'Brien & Hsing, 2011)

7 Conclusions

What are the consequences for the further development of eLearning? For many years, interviews have repeatedly come to the conclusion that the majority of students prefer face-to-face communication and advocate a moderate use of the media in the classroom (Kvavik & Caruso, 2005; Steffens & Reiss 2010; La Roche & Flanagan, 2013; Morreale et al., 2015). If one differentiates according to the nature of the communication situation, it becomes clear that in most situations students intuitively prefer face-to-face communication to electronic communication. This feeling, that there is a learning benefit associated with more communication and more proximity and immediacy, is justified: The insight gained by the research group of the Community College Research Center at the Columbia University Teacher College (Jaggars, 2013) can be seen as one of the most important criticisms of online learning: "Students reported that courses had lower levels of instructor presence". A forced digitization of teaching finds its limits not only in the attitudes of the students, but also in the scientific theory of the subject, the psychological-didactic form of teaching and the lesser presence of the teacher. The important function of presence in learning is one of the most important goods of academic teaching. It should be recognized and respected in spite of all modernization tendencies. Therefore, I do not believe that the need to intensify teaching with media at the expense of presence is particularly useful.

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