

Blended Learning in learner-centered environments – a case study

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Technology based teaching with a learner-centered access seems to be a promising access to teaching. A special learning sequence using Blended Learning fitting to a selected target group of youth learners was created. To develop an appropriate setting the research group selected a student's group in the subject Project Management and Presentation Technique. The analyses of possible learning environments resulted in either a Blended Learning environment or a pure distance learning. For the decision, two different papers were used:

Staker and Horn (2012) define Blended Learning as a teaching method based on four models: the rotation model, the flex model, the self-blend model, and the enriched-virtual model. That seems too simple for the planned study.

In the publication "Fundamentals of Blended Learning" [2] of the University of Western Sydney a useable guide could be found in the description of the SAMR Model (Saliba 2013). Additionally we analyzed Gilly Salmon, (2014) who gives an interesting overview of the future needs in distance learning and focuses on the learners' success, for the distance learning phase.

The final setting was a short course with three onsite teachings (start, presentation with intermediate assessment and final presentation and assessment) with two online teachings based on partner or group work.

As a distance learning platform Moodle was used.

The course based on competence oriented learning outcomes (van Lakerveld 2011). From the beginning, a quality assurance system was defined based on a quality framework for Blended Learning (Mazohl 2014).

The feedback of the students was split in a pre-questionnaire, an intermediate and a final questionnaire. The data analyzes focus on students' expectations and students' experience. To create indicators for quality-based Blended Learning a quantitative survey was conducted as well as a qualitative investigation. The quantitative survey was performed using a questionnaire in context with a practical implementation of the course in frame of regularly teaching. Additional, the prove of the quality framework was measured.



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1. Introduction

Education has changed in the last decades. Brainsford (2000, p 131) states that the educational goals for the twenty-first century are different from the defined goals of earlier times. Today students are expected to understand the current state of their knowledge, so they can build on it. They must be able to make decisions in the face of uncertainty (Talbert and McLaughlin, 1993). Garrison (2004, p 95) also mentions a shifting in the development of education with more evidence to Internet information and communication technologies.

Learner-centered education developed from the term (and technique) of student-centered education, as this was commonly used in the 1990's (for example in K-12 education in the USA). Learner-centered teaching engages students in learning, includes explicit skill instruction, encourages students to reflect on what they learn, motivates the students by giving them some control over the learning process, and, finally, encourages collaboration (Weimer, 2012). The roles of the involved groups change, the students construct their own learning through relevant learning activities. The teacher has the role of a facilitator and assists the students in their learning activities – if it is necessary (Schreurs 2014, p 37).

The new buzzword is Blended Learning (Sharma 2015). It is often mentioned with cost effectiveness (Graham 2008, p 271-272) and better teaching results (Allen 2007, p 15). The Clayton Christensen Institute defines Blended Learning as a formal education program with at least one part of online learning and another (minimum one) part of traditional brick-and-mortar teaching – those all as a well-defined course (or subject) provide students an integrated learning experience.

It is a fact that there are no relevant quality standards existing in Blended Learning. The available DIN 19769 offers to create a quality framework, which can be used in a Blended Learning courses. Additional, there exists the output of the Grundtvig Multilateral Project about Quality in Blended Learning. This study describes the transfer of a traditional learning sequence (or learning path) for students in the subject "Presentation Technology and Project Management" in the school year 2015 at a High School in Austria including some of the quality criteria developed in the mentioned Grudtvig Multilateral Project.

2. Previous research and literature review

Garrison (2004, p 96) describes a transformation of learning environments raising from the ability of online learners "to be both together and apart – and to be connected to a community of learners anytime and anywhere". Heinz (2004) describes the main disadvantage of online learning as "... the lack of social interaction which is taken as given in conventional settings" and describes a model of Blended Learning, developed at the Department for Education and Training (DET) at the University of Salford (UK). As a consequence of the conducted study Blended Learning was found out to be compatible with working life, that it suits to different types of learners, it is a flexible method with reduced attendance and an increased eLearning part. In the study, it is also mentioned that the students' support is a crucial need for effective learning.

Sharma (2010, 456-457) gives three different definitions of Blended Learning (first there is a combination of face-to-face and online teaching, followed by Blended Learning as a combination of technologies and finally as a combination of methodologies). Furthermore, in a critical connotation the positive as well as the negative aspects of Blended Learning are mentioned. As a positive item, Sharma mentions "a '1 + 1

is more than 2' argument assumes a positive connotation, i.e. combining the best of the teacher with the best of the technology will deliver improved learning outcomes."

Christensen (2013) describes in theory of hybrids various Blended Learning models and brings them into context of learning efficiency.

3. The current study

The current study was designed to test the use of learner-centered Blended Learning using quality criteria from the Grundtvig Multilateral Project. Learners were selected from two standard classes (complete group). There were no differences between the learners. The learners did not have made any Blended Learning experience until this study. The educational experience of the learners included traditional classroom teaching, individual work and some small online learning during onsite teaching lessons in some subjects.

3.1. The understanding of Blended Learning

Blended Learning is not really new and can be seen as the logical development of prior tendencies using mixed methods of teaching (Claypols, 2003, p 169). Blended Learning is described in different ways in literature. Mazohl (2015, p 22) defines Blended Learning as a mix of online and face-to-face training of teaching.



Figure 1: Our understanding of Blended Learning (Mazohl 2015, p 23)

An impact to use Blended Learning in a traditional onsite teaching (and replacing some face-to-face parts to learner-centered onsite learning) was given by the studies of Graham and Dziuban (2008, p 271). They mention several studies with different success levels in Blended Learning. Dziuban (2006) found out (in a large data-mining study at the University of Florida) that Blended learning courses produced comparable or superior success rates compared with pure online or face-to-face teaching. This was another motivation to run the learning sequence based on Blended Learning.

3.2. Blended Learning environment

Graham (2008) describes Blended Learning environments. A Blended Learning environment was implemented based on the learning platform Moodle according to Graham. Nevertheless, not all mentioned topics were realized, the focus was set on learning effectiveness and students' satisfaction. The authors were interested to use the strength of Blended Learning, the pedagogical flexibility as described from Millichap (2012, p 2). An additional impact to the Blended Learning environment was taken from the conference papers from Stacey (2008, p 295 – 297).

3.3. Learner-centered teaching using Blended Learning

This method is almost not described and obviously not usual. This access is a kind of innovative use of the combination of Blended Learning and the learner-centered access to teaching. Hofman (2014) mentions in her blog an access to language teaching based on learner-centered Blended Learning. The authors used this combination as a promising access with a high level of success for the learners. The authors were confirmed in the selection of learner-centered Blended Learning by the studies of Millichap and Vogt (2012) who mention "... demonstrate that Blended Learning is designed for many different academic disciplines."

3.4. The learning sequence

Technology based teaching with a learner-centered access seems to be a promising access to teaching. For the planned Blended Learning sequence a fitting target group was selected in the subject "Project management and presentation technics". In this subject, the learner is engaged in constructive and complex thinking in the frame of multilayered content. The use of ICT is naturally; the mainly used software is word processing, image editing and mind mapping tools. That leads almost automatically to educational goals of work presentation, which have to meet the high level of criteria-based quality guidelines of the esthetic, of the context, and the used technology too.

The autonomous development of a Blended Learning sequence focuses on the learners who have to prove their competency in concatenation of knowledge and creativity (Zacherias 2013).

4. Method

A special teaching unit for the subject "Presentation Techniques and Project Management" was selected and restructured to a Blended learning course. The teaching unit was not simple transferred to a Blended learning course, but completely restructured from the onsite teaching.

First, the competence oriented learning outcomes were defined. From those results, the activities were defined and dedicated to either the distance learning or the onsite teaching. Here the study group followed the considerations and proposals of Mazohl (2015).

The students had to organize themselves in groups for the cooperation especially in the distancelearning.

The learning sequence included three special emphases: collaboration in a team using a learner-centered access, the use of ICT and several items of the quality framework.

Two questionnaires were used for the findings: One focusing on the opinion of the learners in context with the three emphases and another to reflect the students' experience after the finished learning work. The assessment was done by a special presentation of the students.

4.1. Learners

The learners were selected from two regular classes (from the same age) and were at high school level. There were 13 male and 20 female students. Their educational background was similar concerning the education in ICT as well as in other subjects. The learners hold an educational level of the ECDL and have yet finished almost all modules (minimum word processing and presentation) of the basic ECDL.

4.2. Materials and Preparation

The teaching was split into three onsite teachings and two intermediate distance learning phases. For the course description material was provided to the students covering the precise description for the learning sequence covering the description of the course, the time table, various assignments, description of the expected results and the relevant information about the distance learning environment.

4.3. Course structure and description

The course itself covered three onsite teaching activities and two distance-learning phases.



Figure 2: Structure of the learning sequence

The first onsite teaching covered all necessary organisational data and a first instruction into the topic of the learning sequence. After this, students had to create the necessary working groups, to plan the work in this group, and to organise their upcoming work in the distance learning phase.

During the distance learning, the groups cooperated to create the concept for the product in the intermediate assessment, to prepare the material and data, and to create the expected content. There were two group contributions provided as assignment during the distance learning. For the students, the necessary tutorial support was organised. The material uploaded to the eLearning platform was evaluated by the trainers and feedback was given to the students electronically.

In the intermediate onsite-teaching, the students presented their created content as an assessment. The students got additional instructions and lessons to prepare the final product. Additional training was given in some special ICT matters.

The students used the second distance learning to correct their work and to create the necessary final product as a teamwork. In this context it is mentionable that the students had the possibility for face-to-face contact in the group during their standard teaching (in other subjects). Another product was developed in groups during the distance learning and had to be uploaded at the eLearning platform. The final presentation of the developed product was used as a final assessment (the marks were given as an average of the two face-to-face assessments and the uploaded work during the distance learning).

4.4. The used quality framework

The defined quality framework used the proposals published in the book from Mazohl (2015) "Quality in Blended Learning".



Figure 3: Quality framework (Source: Consortium Blended Learning Quality Project (2015))

Some of the criteria mentioned there did not count for the relevant course. The quality of the organisation as well as the enrollment had not been topic in that study, due to the fact all these frame conditions were existing at the beginning of the study.

The focus was set on some special quality criteria, especially in the preparation and execution phase of the learning sequence. The specific items were implemented in the special teaching sequence.

4.5. The use of ICT

The use of ICT is an essential issue in Blended Learning. The students were well educated in ICT and used computer intensively for four years. They were experienced in the use of the eLearning platform Moodle. All of them own a laptop and use it in their education.

The necessary knowledge covered word-processing, use of the Internet, image editing and presentation programs, namely Microsoft PowerPoint®.

5. Findings

The findings result from the analyses of a preliminary and a final questionnaire. The first survey asked for the expectations of the students to find out the students' needs and wishes.

The second questionnaire asked for their feelings after the work was done and reflects in some way the personal experience and emotions of the students. Robert S Slavin (1980) mentioned that "Students who were mistakenly given expectations that were too low would not have to work up to their full potential, whereas those whose expectations were set too high would have little chance of success".

5.1. Preliminary questionnaire

The first questionnaire was used to check the expectations of the students, especially in the frame of the quality issues.



Figure 4: Overview of the first questionnaire

The students proof a good access to quality issues. They realize, that it is necessary for students to have all the relevant information available and to get a well-defined support by their trainers – especially during the distance learning. They agree to almost all quality criteria except of ICT. This seems to be strange but may be seen in the context that the students are well instructed and experienced using ICT – and they were at an age of 15 - 17. This specific item should be further investigated and researched in a group with a broader age range.

5.2. Final questionnaire

The final questionnaire refers to the questions done at the start of the learning sequence and was performed at the end of the Blended Learning sequence.



Figure 5: Questionnaire after the course end

The final questionnaire, which focuses on the same items as the first questionnaire shows that students see the educational challenge of the quality criteria different from the trainers.

5.3. Analyses, findings and interpretation

The preliminary questionnaire proves that the students have a sense for quality assurance and can estimate what is an important quality criterion in the teaching situation.

Students appreciate the Blended Learning as a method through which they can learn together, not alone, and create an added value from the active learning (see question one). On the other hand they refuse to participate at such a learning sequence again. Asked about that contrariety students answered that this kind of learning needs a higher level of students' engagement and forced them to do more as in pure classroom teaching. This conflict may be in context with the maturity of learners (see later).

Particularly is the fact that many students do not see the support of the teacher ("teacher answers in time") as an essential issue, on the other hand they were not satisfied with the answer time of the teacher (in average within 24 hours).

A similar finding can be watched in the answer of the question about the course structure. They do not validate the course structure as an important quality issue. On the other hand the answers to the final question shows that they feel that the course – as described above – was not so well structured.

An interesting fact is the validation of the use of ICT: They do not estimate a high level of ICT knowledge necessary for the Blended Learning. Their own knowledge was estimated sufficient by the learners. The teachers evaluated the ICT knowledge as average and not so excellent. Here seems to be a typical example of overestimation of one's own capabilities done by very young students. The role of ICT in Blended Learning must be closer investigated and researched in a broader scope of the age of the learners.

Also remarkable are the answers related with the course structure and the description of the learning sequence: The learning sequence was structured linear by a quite simple step-by-step structure. The students got a detailed instruction and one teaching lesson was used to discuss all the details, the assignments and other related issues. The timetable and all the relevant information was uploaded in the eLearning course too. Nevertheless, the students specified the structure of the course as not well structured as well they found the description of the course not detailed enough. This facts may be explained with the youth of the students. Donnelly (2010) mentions a certain level of maturity of the blended learner, which is necessary for learners using Blended Learning. Also Aycock (2002) refers to that problem. The problem is mentioned in the documents published by the University of Central Florida (2015) as well.

6. Discussion and conclusion

Various models exist for Blended Learning. Analyzing the formal process of Blended Learning the student is involved in face-to-face teaching and on the other hand gets material or is actively involved in online teaching. Self-paced learning is a naturally issue, the learners decide on their own about learning time, speed, and venue of their learning activity (Aspire 2013).

It is necessary to run further studies to investigate the student's behavior and the learning success in Blended Learning courses depending from the age of the learners. The problem of maturity of the learners must be further investigated and studied.

Without doubt, the Blended Learning sequence created an added value: The learners had to organise themselves in groups and to organise an intensive group work. From the feedback of the learners it is clear that they realized this added value and appreciate the Blended Learning as a method of learning more intensively and also in groups.

Blended Learning sequences like here in that study also bring an added value for teachers and trainers. The study offers the teachers and trainers to learn from the students how Blended Learning can be implemented in the most successful way. It offers the teachers and trainers to estimate how learners – especially students at an age of 15 -17 – can handle the Blended Learning.

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