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Making Open Educational Practices real. The case of "The Grand Challenge 2020"

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Abstract

The article presents a case study of a course design which is based on the concept of open educational practices. The course took place during times of lockdown due to the COVID-19 pandemic in which universities in Europe had to stop their presential operation and had to move teaching and learning entirely online. The case study presents in which way the concept of student-centred learning, of problem-based learning and of involving the public into higher education learning has been realised. Students' feedback is analysed and conclusions are drawn.

KEYWORDS: Open Education Practices, Course Design, Students' Feedback

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"Teaching someone (a field of knowledge) is not about getting them to memorize the finished results, but about teaching them how to participate in the process of gaining knowledge... Knowledge in this sense is not a product, but a process" (Bruner, 1974, p. 74).

1. Introduction

During the past digital semester 2020, all Higher Education Institutions across Europe have had to close down their campuses due to the corona pandemic. This has fuelled the need for digital teaching formats and courses on a broad front. All courses at European HEI were held online for the entire semester without any face-to-face interaction with students. While for many teachers this was their first encounter with such an intensive online teaching, there are varying degrees of expertise and experience across all HEIs. These differences tend to occur less between institutions than between groups of teachers, departments or institutes. Wherever extensive experience in online teaching and learning was available, the digital summer semester 2020 has been regarded less as a challenge or deficit format than an experimental space. In these cases, the shift to online teaching was often perceived as an opportunity, where learning designs beyond the synchronous online lecture mode have been explored. Within these experimental space, often open educational scenarios have played a role. Then educational scenarios were designed around problem-oriented, student-oriented and competence-oriented learning experiences and digital tools were seen to enable such characteristics rather than "the remote" being an obstacle to it. In many other cases teaching in times of Corona shutdowns meant online synchronous lecture format (which we like to refer to as the "synchronous reflex"). The question of how online learning can be designed to facilitate the process of teaching beyond the traditional synchronous lecture format has been the subject of much discussion.

The Grand Challenge 2020 (in the following abbreviated as GC) course concept is an example of such an experiment in which we transferred a student-centred and problem-oriented course into an online setting following the model of open education practices.

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During the last semester of their bachelor's program (6th semester), students in business information sciences at the Baden-Wuerttemberg Cooperative State University developed foresight-projects on the topic "Impact of artificial intelligence for future societies" completely online and presented their results within the scope of an online student conference. This online conference was streamed live and the resulting student works (artefacts: an essay, a short presentation (TED talk format) and a short video (clip/ film) were published on the project website next-education.org (www.next-education.org /grandchallenge2020). The course design fully implements the "shift from teaching to learning" (Wild 2005). The course design has been applied and improved for some years now. Even though it is based on the approach of "open education" (see section 3), it is regularly carried out on campus in blended learning format.

Students were invited to design their own projects and to choose one of five overarching topics related to artificial intelligence and the future society: Work, education, the life of the individual in society, art and culture, and politics. Teachers provide support as coaches during the whole project team work process. The task was to develop a future vision for 2040 on the basis of an ethical analysis. One part was to elaborate the consequences of the increasing influence of artificial intelligence on social processes. The other task was to develop recommendations that have to be implemented to ensure that necessary conflicts of values and interests are socially beneficial and lead to a desirable future.

2. Method

This paper aims to address and answer the question on how online learning can be designed to facilitate student-centred learning in an open learning environment rather than relying merely on a knowledge transfer model in a teacher-centred fashion. To answer this question, we will apply the case study methodology and present one case, analyse its design and the resulting experiences. Case based research can be defined as an "approach in which the investigator explores a bounded system (…) over time through detailed, in-depth data collection involving multiple sources of information (e.g., observations, interviews, audio-visual material, and documents and reports) and reports a case description" (Creswell et al., 2007, 245).

Yin's (2014) two-part definition focuses on the scope, process, and methodological characteristics of case study research, emphasising the nature of inquiry as being empirical and the importance of context to the case.

Within the scope of the present case study we will first give an overview of the course design and the context (section 2). Then we will introduce the concept of open educational practice (OEP) and will analyse the course against the OEP framework (section 3). In a next step the theoretical implications of the underlying teaching/ learning model will be analysed according to learning theory (section 4), followed by an analysis of the students' feedback on the course, that has been collected as qualitative data (section 5). Finally, the paper provides a short summary and conclusion (section 6).

3. The "Grand Challenge 2020": Course structure and design

The course focuses on a red-hot topic: the consequences of digitalisation, artificial intelligence and big data on our society. The students are thus dealing with a topic that affects them personally and will also shape their future (professional) everyday life. Within the curriculum of the bachelor's program of Business Informatics the course is anchored within a module called "New Concepts". During the course of study, it is located in the sixth semester, the final semester of the program.

At the beginning, the following questions are raised, which provide a thematic introduction to the course: What are the consequences of the continuous development and ever-increasing dissemination of artificial intelligence (AI) and big data on our society? What is the actual state of the art? What scenarios of implementation are available? Is our society on the right path - or will there be unpredictable risks? What about the protection of our private data? Is AI mature enough to determine our lives, e.g. when driving autonomously?

In this course, students will address these questions in relation to 5 major topics of the digital future:

1. The digital work of the future under the sign of AI
2. AI in the education of the future - individual, flexible, networked and lifelong, ...?
3. Our life with AI - the transparent citizen: personal data as the gold of the future
4. AI and the culture and art of the future
5. The digital, networked society: politics in the age of AI.

Around each topic, a project group of four to six students is formed. This group works together throughout the entire semester on all artefacts.

The key task of the GC 2020 is to develop a future scenario in the light of artificial intelligence and Big Data of the year 2040. How digitization will develop in relation to artificial intelligence and big data - where might be risks, where should we seize the opportunities?

In this course, students are asked to elaborate their subjective "strong beliefs" and problem statements and then discuss these within their project group. The aim of this discussion is to juxtapose contrasting "strong beliefs", to refine them and thus to approach the subjective-thematic area created by the group on the basis of their respective background experiences and contributions. This results in unresolved problems, questions and thematic outlines, which will be further analysed and developed in the course of the project. A second step is the development of a "mission statement" of the project group, which focuses on possible approaches to the problem statement. The project groups therefore reflect on what needs to be done to achieve a good future for its topic against the background of their "strong beliefs" and problem statements. Those work results consisting of "strong beliefs", problem statements, open questions and outline points resulting from the discussion as well as the mission statement are documented in a set of slides. This first thematic approach is being presented in the plenum constructively involving fellow students as active advisors and feedback providers.

The next learning unit focuses on the research-based transfer of the "strong beliefs" into a future scenario. On the basis of assumptions as well as open questions, available literature and foresight studies, the teams develop a probable scenario (probable case) out of a best and a worst-case scenario [On the concept of foresight analysis, see also comprehensively Müller (2008), who reviews the thematic references and the current state of research in his dissertation. For the development of scenarios see also Weinbrenner (1994) and https://www.sowi-online.de/praxis/methode/szenariotechnik.html]. Based on this scenario, the working groups derive policy recommendations to address the problematic aspects of the future scenario from their perspective and identify the conditions for a successful future scenario that is as constructive as possible.

In total, the student groups produce a portfolio consisting of three artefacts:

- 3-5 pages long essay "Future with AI in 2040" (on the respective group topic),
- Challenge 2020 video on the respective topic (max. 5 minutes),
- seven-minute TED-Talk presentation that is presented along with the video to an expert jury during the public final conference.

The course concludes with the "Grand Challenge Conference". Since the course was offered within three different classes of the business informatics bachelor's program at the same time, there was the possibility to have groups with the same topics compete against each other during the GC. An expert jury evaluated the group work (artefact b and c) and selected the three winning groups with the best concepts and most convincing arguments. Through a peer-assessment process, students also act as feedback providers and jurors, as they evaluate the essays (artefact a) vote to award the best essays. All essays and videos have then been published online under a CC-Licence [during publication, various general conditions must be taken into account, such as the students' declaration of consent to publication and the clarification of copyright issues regarding the material to be seen in the video].

The course is designed as a 12-week course. The basic framework of the course includes three to four 3-hour online conferences, so-called challenge conferences:

- Challenge Conference 1: In this conference, the project-oriented way of working is developed together with the students, the groups are formed, and the topics are defined.
- Challenge Conference 2: Based on their "strong beliefs", the students elaborate problem and mission statements and vision descriptions for a desirable future on the basis of their group beliefs. They present and discuss these with each other.
- Challenge Conference 3: In a next step, they carry out ethical analyses of their subject areas, in which they identify important value and interest conflicts resulting from the influence of AI in possible future scenarios 2040 and evaluate the consequences. The results are presented and discussed in the plenum.
- Challenge Conference 4: Grand-Challenge Conference: The students present their overall results in the form of a seven-minute TED talk and a video clip presentation to a jury within a public (student) conference.

The development of the artefacts is organized by the student groups themselves. Between the individual Challenge Conferences, students have the opportunity to discuss and consult with the teaching team about their questions and topics, work progress, and the learning materials used in approximately one-hour group coaching sessions. In practice coaching has proven to be an important success factor for the open educational design. It allows students to gain feedback, certainty and affirmation about their learning pathways, learning methods and learning progress, as these aspects are widely student driven activities in open educational learning scenarios. The consulting and coaching processes explicitly includes both themes, a) the content dimension of learning with feedback and advice on the student's development of the respective group topics and artefacts, as well as b) the process dimension of learning including feedback on the group collaboration process. In addition to these coaching appointments, students always have the possibility to organise further spontaneous, self-initiated advisory and coaching processes with the teaching team. The course concept is displayed in Figure 1.

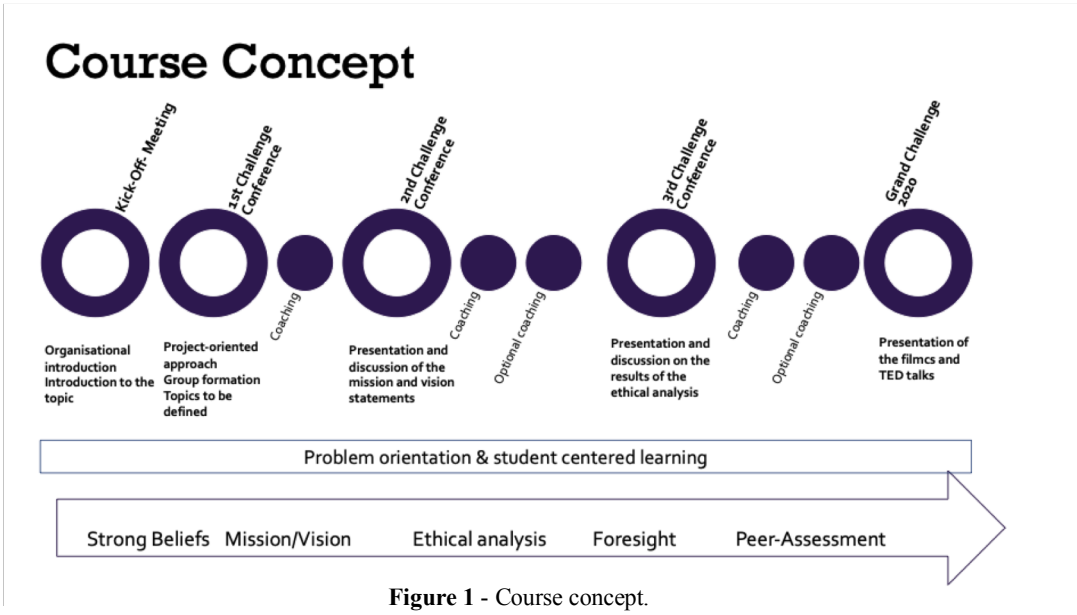

Figure 1 - Course concept.

4. The Grand Challenge as an open educational practice

The didactical design of the GC follows the concept of open educational practice (Ehlers 2011). The concept was first published by Ehlers in 2011 and has continued to develop ever since, among others by Huang et al. (2020). Didactically, it is based on a combination of so-called "open" educational approaches with the use of free and openly licensed learning materials, so-called Open Educational Resources (OER). It is a framework concept, which will be discussed here particularly from the perspective of its implications for the micro level, i.e. the teaching/learning process, but in principle also has effects at the institutional level (meso level) or policy level (macro level). It is a framework concept that does not contain any concrete educational approaches, but rather provides a framework that defines normative categories (which are basically: openness, learners' participation) according to which existing educational approaches and teaching/ learning methods can be classified.

In addition to the free availability of products and content, the core idea of the Open Movement is the culture of participation (Ehlers, 2014). Open software thrives from the involvement of users, who develop applications based on their own ideas and needs. Open content is created when users spread their knowledge and share it as free educational resources. Open innovation takes place when users participate in value-added processes and benefit from the results. Thus, in open education, students are not seen as "products" of educational institutions, but as active participants and potential innovators in an educational environment.

The goal of open education is therefore to create a teaching/ learning culture (Ehlers, 2014) in which learners and teachers mutually see themselves not only as "knowledge transmission agents" (teachers) or "knowledge receiving agents" (students) but also as producers of knowledge and innovators of their own learning environment. The underlying concept of learning as an activity is not "transmission – acquisition" but "participation – transformation" (Ehlers 2014). This perspective goes beyond the provision of teaching/learning materials and strives for an open educational culture. Although financial resources are a prerequisite, they do not guarantee the success of open education initiatives. Cultural aspects play a decisive role in the sustainable anchoring of such initiatives. To motivate learners and teachers to participate in open education initiatives, participation in such projects must be anchored as a value in the teaching/learning culture of an educational institution and be recognized accordingly (Ehlers, 2014).

At the core of the concept there is the combination of didactic openness in the teaching/learning concept with the concept of open educational resources. The conception of OERs is not only about using already existing resources, but also about creating educational resources by completing studies or by developing or remixing existing materials (see Fig. 2).

In addition to its descriptive function, the concept also has a normative objective. While it is initially suitable for classifying existing teaching/learning scenarios and for gradually differentiating open educational practices from rather predetermined (not determined by the learner) educational practices, from a normative perspective it shows that open educational practices are

rather desirable. Higher gradual manifestations on both dimensions are described as desirable in the model. For example, the original model from 2011 points out that a gradual increase in OEP is not only intended to represent other forms of teaching/learning, but also to achieve an improved quality in learning outcomes - measured in terms of teaching/learning goals. OERs should therefore not only be used as a substitute for the mediation processes otherwise carried out by teachers (e.g. by sharing a video) but should above all be accompanied by an expansion of the students' degree of freedom and participation in teaching/learning.

The approach we have chosen to classify didactic scenarios/learning activities in terms of their openness follows the approach to classify different teaching styles by Baumgartner (2007): Teacher - Tutor - Coach. Other involved approaches to classify learning activities have been considered, which come to similar conclusions, such as Paavola, Lipponen and Hakkarainen (2004), which propose learning metaphors along the chain acquisition - participation - knowledge creation, Laurillard (1993) or a comprehensive analysis by Mayes and de Freitas (2004) for JISC. Following this analysis, educational levels of "freedom" or "openness" were conceptualized:

- "Low", or pre-determined teaching/learning scenarios when both the goals and the learning and/or teaching methods are rooted in "closed" unilateral, transmissive and re-productive teaching and learning approaches. In these contexts, the underlying belief is that teachers know what learners have to learn and focus mainly on knowledge transfer.
- "Medium", or co-determined teaching/learning scenarios represent a stage where goals are still defined and predetermined, but where teaching and learning methods are presented as open pedagogical models. They promote dialogue-oriented forms of learning or problem-based learning (PBL), which focus on dealing with developing "know-how".
- "High" degrees of freedom and openness or open teaching/learning scenarios in pedagogical models are given when both learning goals and methods (e.g. learning paths) are determined and controlled to a high degree by the learners. Questions or problems around which learning takes place are determined by the learners (SRL - self-regulated learners), and the teachers facilitate through open and experience-oriented methods that take into account different learning paths, either through "scaffolding" and tutor interactions (according to the concept of the "zone of proximal development" (ZPD) according to Vygotsky) or through contingency tutoring (here e.g. Woods & Woods strategies of reinforcement, domain-specific or temporal contingency).

In continuation of the OEP model of 2011, we have added a further category to the description of the degree of participation of students in the didactic design. In addition to the determination of learning paths and learning content, as it was done in the original model of 2011, we have added the category of competence goals. The reason for this is that it has been shown that in the context of institutionalised and especially formal educational processes, a framework for setting competence goals by the teachers is the norm. For informal learning processes this factor is in turn more strongly determined by the learners.

With regard to the dimensions of the concept of open educational practice, as shown in Fig. 2 and described here, the didactic design of the GC can be classified as follows:

Dimension 1: Openness of the teaching/learning scenario

The GC can be classified as an open teaching/learning scenario. While the competency goals are set by teachers, both the learning paths and the learning content are determined by the students.

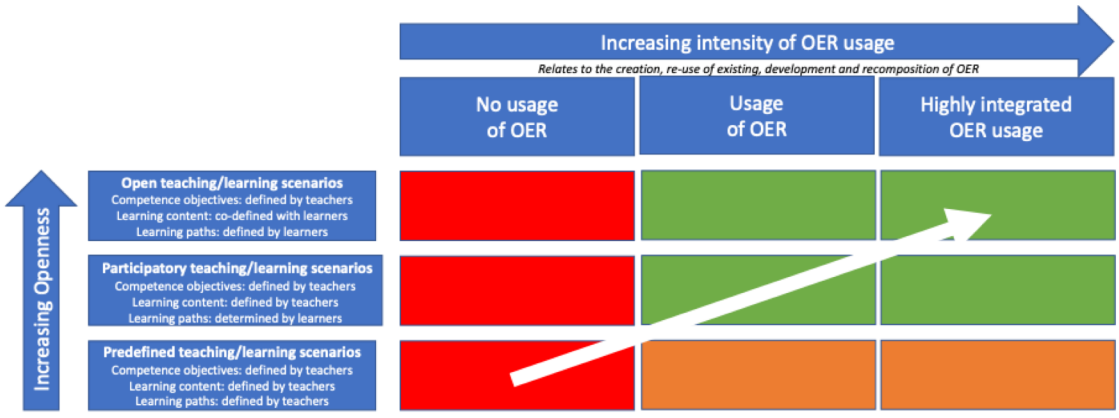

Figure 2 - Open Education Practice (further developed from Ehlers 2011).

Dimension 2: Use of OER

The GC can be classified as a teaching/learning scenario with high didactic integration of OER. All functions of OER are used, since the participants of the course benefit from existing OERs, further develop and recombine some of them, and develop their own OERs.

5. Learning theory and course design

For more than a decade there has been a worldwide discussion of a "Shift from Teaching to Learning", to quote UNESCO (see Berendt, 1999, 2002). The prevailing understanding across the different subjects at HEI, that didactic processes rely on "content-orientation", i.e. the presentation and communication of teaching content, is becoming increasingly less important. Thus, a student-centered approach that focusses on supporting self-organised learning processes and needs of students, consistently implements this change in perspective from teaching to learning. The teaching and learning concept of the GC organises the learning process starting from the student perspective. It focuses on the results of learning, which are achieved by the production of three artefacts, hence an "output orientation" to the "learning outcomes" is assumed. In addition, students and project groups are invited to reflect on their learning and work strategies and the group processes that they have used and experienced during the project work. Consequently, due to its emphasis on dealing with complex authentic problems and multiple perspectives this results in an competence-oriented approach that goes beyond knowledge transfer (for an explanation of the concept of competence and competence-oriented learning, see also Ehlers 2020).

The competence-oriented approach is based on the concept of "situated learning". In this regard, learning refers, in the sense of a "deep approach", to complex problems under most authentic conditions (on the concept of deep vs. surface learning, see also Entwistle (1981), Ramsden (1987) and Biggs (1993)) [Subsequent research by Marton & Säljö produced six conceptions of learning that university students experience during their studying period (Marton & Säljö, 1997). The six conceptions of learning are structured in a developmental hierarchy starting from the lowest: as a quantitative increase in knowledge; as memorisation; as the acquisition of facts for later use; as the abstraction of meaning; as a process designed to understand reality; and lastly for "developing as a person". The diagram shows how the conceptions are related to the amount of knowledge obtained, as well as their relation with deep and surface approaches to learning]. In the GC's student projects, students are not taught about the topic of artificial intelligence, but rather learn what seems relevant from their perspective by working on a self-chosen problem. Experts coach them along the way. As they present their ideas to their peers and to the public learning also happens through exchange and alignment. The problem-orientation allows to take multiple perspectives, stimulates articulated reflection within social exchange.

The course is completely and exclusively digitally supported and carried out online. It is structured in a problem-oriented way. The focus is on competence learning, taking into account the concept of student-centered teaching in a socio-constructivist teaching/learning setting, in which knowledge transfer is less important than student-centered coaching [For the understanding of teaching in this relation, see also Baumgartner's remarks on learning in the socio-constructivist mode, in which teaching is conceptualized as coaching of learners. The problems are not given by teachers but developed by the students themselves. Knowledge generation and development is the main focus. Baumgartner distinguishes this type of teaching from a cognitivist understanding of teaching and from a mediation-oriented behaviorist understanding (Baumgartner & Payer, 1997)]. Elements of peer feedback and peer assessment are integrated into the assessment.

5.1 The concept of situated learning

According the approach of situated learning, learning is conceptualised as an active and constructive process, rather than a passive reception of information (Wild, 2005). The concept is based on the assumption that only can be understood what itself has been (re-)constructed mentally or in reality. Moreover, in problem-based learning, the accumulated knowledge can not only be experienced and envisioned as a product, but also as a process (ibid.). When constantly teaching is solely carried out through direct instruction and transferring knowledge as a "ready-made product" without the associated knowledge process, deprive knowledge acquisition is deprived of its process-related, generative problem-solving, reflexive and contextual character (Baum-Gartner, 2005; Wild, 2005). Individual - cognitive, metacognitive and resource-related - learning strategies and heuristics (Wild, 2005), including strategies of independent and cooperative learning, learning monitoring, learning control and self-management cannot or hardly be acquired through receptive learning and isolated and abstract training of learning skills. For an elaboration on the importance of these learning strategies and especially the development of students' self-organisation skills for their development of so-called "future skills" see Ehlers (2020) [Cognitive psychology and (moderately) constructivist approaches, which aim at self-organized and self-regulated learning and related instruction, also

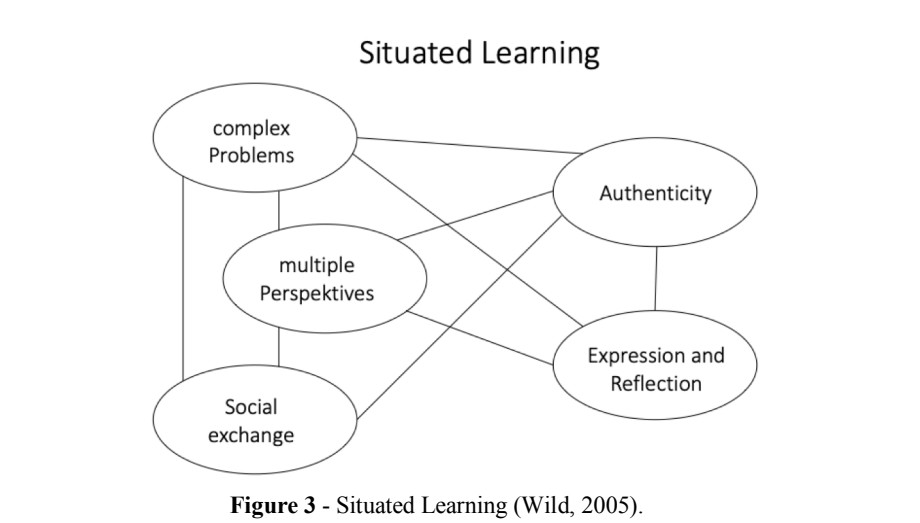

Figure 3 - Situated Learning (Wild, 2005).

provide a foundation in learning psychology (see Baumgartner, 2005; Wild, 2000; Reinmann-Rothmeier & Mandl, 2001)].

5.2 On the concept of problem-oriented learning

The concept of problem-oriented learning has three basic characteristics (see Mayo et al., 1993; Marks & Thömen, 2001):

1. orientation towards complex problems,
2. student-centering through self-directed learning in small groups and
3. supervision by learning guides.

According to the concept, the starting point of all learning activities in the GC event is the assignment or selection of a comprehensive problem task, which due to its complexity can only be solved with the help of the prior knowledge of other students within the given time. In the GC, the task is - according to the socio-constructivist understanding of teaching described above - not delimited as a clearly tailored problem area or task, but is presented to the students as a comprehensive topic area (here: "Effects of Artificial Intelligence on Society") for which they should first work in depth on the problem in order to generate a clearly delimited and defined problem. The thematic area is the stimulus for all further activities, which is why special importance is attached to its formulation and presentation. Students develop awareness to the existence of different positions on the topic of technology assessment in relation to artificial intelligence, as well as to the need of developing basic ethical attitudes towards the topic. By confronting the students with self-developed problems (based on their "strong beliefs" and mission statement) before the transmission of related content, a particularly strong interest in learning new contexts is created (Barrows, 1996; Reinmann-Rothmeier & Mandl, 2001).

Recommended solutions are developed jointly within the group, while each member is assigned a specific task and role (manager, researcher, analyst, rapporteur, etc.) that is communicated externally. The teacher only acts as a learning guide or supervisor; he/she only provides learning resources and takes over the teaching of content only in exceptional cases or to a very limited extent (Reinmann-Rothmeier & Mandl, 2001; De Grave et al., 1999).

While in traditional teaching, committed to a knowledge application paradigm, well-defined problems are usually used primarily to deepen, review and apply knowledge that has already been acquired (Aebli, 1983), more recent concepts focus on problem-oriented knowledge acquisition or generative problem solving (Klauser, 1998) on the basis of technically significant, authentic ("ill-defined") problems. The aim is dealing with those questions that have no correct or incorrect answers.

Through problem-based learning, students generate new knowledge within the process of problem solving (Klauser, 1998, p. 278). Courses in problem-based learning do not - as is often the case - start with longer phases of instruction, but with the challenge of independent learning.

5.3 The concept of public exposure within the learning process

Another important aspect for learning design is the component of public visibility, which at various points in the design of the course progressively becomes increasingly effective. From the beginning, students are informed that the course will end with a student conference, in which all artefacts will be presented to a jury and the public (including both the academic and professional public, as well as the broader public via online media). In addition, the students are asked to

agree to the publication of all student artefacts. Their working papers, video clips and presentation materials are then published on the Internet. This also allows them to access materials of the previous year's students. The final public conference is regularly promoted on social media channels - LinkedIn, Facebook, Twitter and Instagram - and students are encouraged to do so on their own channels.

Hofhues (2010) points out that the integration of public components in teaching can help to create an authentic learning context and facilitate learning according to a constructivist understanding. However, publicity does not make teaching a "self-runner" - on the contrary: Learners have to be prepared for the embedding of the public, otherwise they will easily be overwhelmed by the situation of public learning. Hofhues (2010) writes:

"They are not used to displaying their learning process in public and to having it transparent. Sometimes they also find it difficult to face presentation and discussion in front of external parties. In this relation, the medium of mediation hardly plays any role; the very opening of the learning process causes learners to be emotionally and motivatively involved in the context in a different way than in closed learning spaces." (translated from German).

If - as has happened here - a rather constructivist understanding of teaching and learning is applied, in which learning is embedded in complex or everyday situations, and social aspects of learning are taken into account (Reinmann & Mandl, 2001), the public can certainly be understood as a didactic mean, because: According to Hofhues (2010), embedding the public sphere is usually based on the concept of problem-oriented learning as described above.

6. Feedback from students

The following feedback is based on written and oral anecdotal feedback from students. Feedback was collected formatively throughout the course in form of an unstructured collaborative "Etherpad" online Whiteboard on which students could provide feedback on the content dimension and the process dimension of the course. In addition, the students were interviewed on their experience and feedback on the course afterwards. The interviews in a shortened and complied format have been published as artefacts in form of podcasts themselves and can be found on the website of the research group. A selection of the students' artefacts is also published there. The collected notes were paraphrased and grouped thematically; the results are presented below.

Project oriented design

Through the course design as POL the students felt challenged, but also supported and valued. Problem-based learning was considered more effective and sustainable and was evaluated positively in comparison to traditional teaching methods.

The students rated the didactic design of the course as more conducive to learning than "classical bulimic learning" for exams at the end of a semester.

Self-Organisation

At the same time, they highlighted the challenge of self-organization in this context. This point emphasises the importance of taking responsibility for one's own learning process, which is important for the concept of learner autonomy. The following statements give some hints:

The students consider it particularly important that orientation is provided in the problem-oriented learning process through timetables, milestones and group coaching.

Students encourage the definition of clear goals and milestones in a kick-off event

Coaching and support

Furthermore, the students' feedback reveals the advantages of guidance by the teachers rather than instructions. They emphasize the concept of coaching and differentiate it from other forms of teaching that they experience in their everyday work as particularly positive with regard to their project-based approach. In addition, they note that the coaching has supported the ability for self-directed and self-organized learning.

Students have experienced the intensive coaching sessions, insightful information sessions and many suggestions for reflection as helpful for their own problem construction and solution process.

The students perceived support both in terms of subject matter and explicitly in personal respects.

The students felt that their creativity was being encouraged.

Public

The involvement of the public as well as the publication of the artefacts has created a feeling of recognition by the teachers among the students, what has motivated them to commit themselves beyond the usual level.

Due to the presentation of their work in a public event with high media impact, the students perceived their work as highly valued and important. The media attention led to a reframing of the amount of work to be done.

Workload

Constructive criticism was also expressed, mostly relating to the amount of work that was perceived as too high in some places.

The digital setting and the required artefacts were perceived as very demanding, the time required (student workload) was estimated as too high.

7. Conclusion

It can be concluded that the design of the course can be considered as open educational practice. The framework was designed to involve the students in a participatory way both in the selection of the learning contents and in the learning pathways.

The didactic concepts of problem-oriented learning, student-centred teaching, including in the change from teaching to learning, as well as the involvement of the public in the teaching/learning process were simultaneously incorporated into the concept of teaching.

As a result, the chosen concepts were well suited to promote online learning in an active, student-centered way. In this manner, teaching and learning scenarios do not have to make any concessions or restrictions with regard to open, active, student-centered forms of teaching and learning. The students' perspective on their learning process supports this position. Nevertheless, it is also apparent that the practical experience with the GC concept required a high workload on the part of the students, which was sometimes perceived as too high.

Beyond the shared experience, we feel it is important to note that the needs of students (and teachers) can only be met through a balanced interplay of technical, organizational and social factors, which is the basis of the GC concept. Therefore, in addition to the reported and contextualized experience, we are interested in the model behind the generation and dissemination of content and the associated promotion of knowledge sharing among students, on which the GC is based. The GC is visible via the artifacts produced and published by the students, in the academic and public space. On the other hand, it is also a teaching concept which we want to share openly on the basis of the analysis above, with its didactic ideas and implementation strategy as an open educational practise which could be reused and adapted to specific disciplines and subjects in other courses.

By demanding an open education culture, we take up the topic of sustainability within the discussion on OERs and advocate a change of learning cultures at higher education institutions towards a holistic open education. This not only includes free educational content, but also involves learners and teachers in the process of institutional development to be able to use their needs and ideas as potential for innovation. In order for open education initiatives to become effective as vehicles for HEI development regarding new media, it is important to consciously shape the factors outlined above to influence the active participation of students at the institution. A sustainable change of the learning culture towards a stronger involvement of students can only take place if it is encouraged at different levels of the organisation. A substantial change of the learning culture, in the sense of open education, will only occur if the HEI strategically supports such a change "from the top" and at the same time designs pedagogical-didactic contexts in such a way that open education initiatives can grow "from below" (Seufert & Euler, 2004).

References

Aebli, H. (1983). Zwölf Grundformen des Lehrens. Eine Allgemeine Didaktik auf psychologischer Grundlage. Klett-Cotta.

Barrows, H.S. (1996). New directions for teaching and learning: Vol 68. Bringing problem-based learning to higher education: Theory and practice. Problem-based learning in medicine and beyond. 3-13.

Baumgartner, P. (2007). Zen and the Art of teaching. Communication and interaction in education. Hagen.

Baumgartner, P., Payr S. (1997). Erfinden lernen. In: Müller, K.H und Stadler F. (Hg.): Konstruktivismus und Kognitionswissenschaft. Kulturelle Wurzeln und Ergebnisse. In honour of Heinz von Foersters. Wien-New York: Springer, 89–106.

Baumgartner, P. (2005). Eine neue Lernkultur entwickeln: Kompetenzbasierte Ausbildung mit Blogs und E-Portfolios. In: ePortfolio Forum Austria 2005. Hrsg.: V. Hornung-Prähauser. Salzburg, Austria. 33-38.

Biggs, J. (1993). What do inventories of students' learning process really measure? A theoretical review and clarification. British Journal of Educational Psychology, 83, 3-19.

Bullinger HJ. (1994). Was ist Technikfolgenabschätzung?. In: Bullinger HJ. (eds) Technikfolgenabschätzung (TA). Technologiemanagement — Wettbewerbsfähige Technologieentwicklung und Arbeitsgestaltung. Vieweg+Teubner.

Creswell, J. W., Hanson, W. E., Plano, C., Vicki L. & Morales, A. (2007). Qualitative research designs:

Selection and implementation. The Counseling Psychologist, 35(2), 236-264. doi: 10.1177/0011000006287390

De Grave, W. S., Dolmans, D. H. J. M. & van der Vleuten, C. P. M. (1999). Profiles of effective tutors in problem-based learning: scaffolding student learning. Medical Education, 33, 901-906.

Ehlers, U.-D. (2011). From Open educational resources to open educational practices. E-Learning Papers. Vol 17, Nr. 1. ISSN 1887-1542

Ehlers, U.-D.; et al. (2011). Beyond OER: Shifting Focus from Resources to Practices. Lisbon, Essen.

Ehlers, U.-D. (2007). Making the difference in E-Learning: Towards Competence Development and E-Irritation. Proceedings to EDEN Research Workshop 2007. Barcelona.

Ehlers, U.-D. (2014). Open Learning Cultures. A Guide to Quality, Evaluation and Assessment for Future Learning. Springer. New York, Heidelberg.

Ehlers, U.-D. (2020). Future Skills – Future of Learning – Future of Higher Education. Karlsruhe, online at: www.nextskills.org

Ehlers, U.-D., Adelsberger, H. H., Schneckenberg, D. (2008). Stepping up the Ladder. Competence Development Through E-Learning. Proceedings to AACE World conference ed-media. Wien.

Ehlers, U.-D., Adelsberger, H. H., Schneckenberg, D. (2011). Web 2.0 and Competence Oriented Design of Learning - Potentials and Implications for Higher Education. British Journal of Educational Technology. Vol 42. Issue 5

Ehlers, U.-D., Adelsberger, H. H., Teschler, S. (2008). Reflexion im Netz: Auf dem Weg zur Employability im Studium. Proceedings Wirtschaftsinformatik Kongress 2009. Wien.

Ehlers, U.-D., Schneckenberg, D. (2008). Webucating the Reflective Practitioner. Towards Competence Development in E-Learning. Proceedings to "Changing Faces of Learning" conference. Swiss Center for Innovation and Learning. St. Gallen.

Ehlers, U.-D., Schneckenberg, D. (2009). Bridging the Gap – How Web 2.0 can help Business Education to foster Organisational Learning. Proceedings to OLKC conference. Amsterdam.

Entwistle, N. (1981). Styles of Learning and Teaching; an integrated outline of educational psychology for students, teachers and lecturers. Chichester: John Wiley.

Grunwald, A. (2020). Verantwortung und Technik: Zum Wandel des Verantwortungsbegriffs in der Technikethik. In: Seibert-Fohr, A. (Hrsg) Entgrenzte Verantwortung: Zur Reichweite und Regulierung von Verantwortung in Wirtschaft, Medien, Technik und Umwelt. Springer, Berlin.

Hofhues, S. (2010). Die Rolle von Öffentlichkeit im Lehr-Lernprozess - In: Mandel, S., Rutishauser, M., Seiler-Schiedt, E. (Hrsg.): Digitale Medien für Lehre und Forschung. Münster; New York; München; Berlin. Waxmann. 2010, 405-414.

Huang, R., Tlili, A., Chang, T., Zhang, X., Nascimbeni F. and Burgos D. (2020). Disrupted classes, undisrupted learning during COVID-19 outbreak in China: application of open educational practices and resources. Smart Learning Environments, 7(19). https://doi.org/10.1186/s40561-020-00125-8

Klauser, F. (1998). Problem-based learning. Ein curricularer und didaktisch-methodischer Ansatz zur innovativen Gestaltung der kaufmännischen Ausbildung. Zeitschrift für Erziehungswissenschaft, 1(2), 273-29.

Laurillard, D. (1993). Rethinking University Teaching: A Framework for the Effective Use of Educational Technology, London, New York: Routledge.

Marks, F. & Thömen, D. (2001). Die Moderation des Problemorientierten Lernens. In: Berendt, B., Voss, H.-P., Tremp, P. & Wildt, J. (Hrsg.), Neues Handbuch Hochschullehre. Raabe.

Mayes, T. & de Freitas, S. (2004). Stage 2: Review of e-learning theories, frameworks and models. JISC desk research study. Retrieved on 2010, November 17, from http://www.elearning.ac.uk/resources/modelsdeskreview/

Mayo, P., Donnelly, M.B., Nash, P.P. & R.W. Schwartz (1993). Student Perceptions of Tutor Effectiveness in problem-based surgery clerkship. Teaching and Learning in Medicine 5 (4), 227-233, https://psycnet.apa.org/doi/10.1080/10401339309539628

Müller, A. W. (2008). Strategic Foresight - Prozesse strategischer Trend- und Zukunftsforschung in Unternehmen. DISSERTATION. St. Gallen.

Paavola, S., Lipponen, L., & Hakkarainen, K. (2004). Models of Innovative Knowledge Communities and Three Metaphors of Learning. Review of Educational Research, 74(4), 557-576.

Ramsden, P. (1987). Improving teaching and learning in higher education: the case for a relational perspective. Studies in Higher Education, 12, 274–286.

Reinmann-Rothmeier, G. & Mandl, H. (2001). Unterrichten und Lernumgebungen gestalten. In: Krapp, Andreas & Weidenmann, Bernd (Hrsg.), Pädagogische Psychologie Beltz. 4.edition, 601-646.

Seufert, S. & Euler, D. (2004). Nachhaltigkeit von E-Learning–Innovationen – Ergebnisse einer Delphi–Studie. Arbeitsbericht 2. St. Gallen: SCIL, Universität St. Gallen. Online at: http://www.scil.ch/fileadmin/Container/Leistungen/Veroeffentlichungen/2004-01- seufert-euler-nachhaltigkeit-elearning.pdf [15.3.2008].

Weinbrenner, P. (1994). Die Wiedergewinnung der Zukunft als universale Bildungsaufgabe - Zukunftswerkstatt und Szenariotechnik im Methodenvergleich. In: Fischer, Andreas und Hartmann, Günter (Hrsg.): Ökologisches Lernen - Projekte stellen sich vor. Hattinger Materialien zur beruflichen Umweltbildung. 11. Hattingen, 75 - 114.

Wild, K.-P. (2000). Lernstrategien im Studium. Münster: Waxmann.

Wild, K.-P. (2005). Individuelle Lernstrategien von Studierenden. Konsequenzen für die Hochschuldidaktik und die Hochschullehre. Beiträge zur Lehrerbildung, 23(2), 191-206.

Yin, R. K. (2014). Case study research: Design and methods. Los Angeles, CA: Sage.