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A pedagogical perspective on online teaching

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Keywords

Online teaching, Pedagogical principles, Student learning, Alignment

Abstract

In this paper the authors discuss if and how pedagogical principles, originally developed for on-campus courses, can be equally applicable to online courses. The authors present and argue for six pedagogical principles that guide the development of current and future courses at a large Scandinavian business school; academic challenge, interaction and collaboration, engagement and motivation, diversity and flexibility, academic socialization, and personal development and integrity.

The authors describe how these pedagogical principles guided a recent online initiative in which three fully online courses were developed. Based on post-course in-depth interviews with 19 students, the authors discuss to which degree the pedagogical principles were met in the online setting. They conclude that online courses are largely able to support existing pedagogical principles and thereby become an integrated rather than independent form of teaching and learning. Finally, the challenges and dilemmas that surfaced as a consequence of the alignment of the online format and the pedagogical principles are discussed.

1 Introduction

In 2014 Copenhagen Business School (CBS) decided to develop online courses for our daytime students. The reasons for doing so were to experiment with technology to see if it would provide new opportunities for student learning and to meet a request for more flexibility - particularly from students who were away from the university on internships or exchange as part of their studies. While the approach was highly experimental, it was important to make sure that students did not lose out on learning while participating in the experiment.

Early on the lecturers who volunteered to teach the online courses received pedagogical and technological support and training by us - the teaching and learning unit consisting of pedagogically trained academic faculty, instructional designers, and technological support staff. Based on this and CBS' pedagogical principles as the anchor point for all three courses, the lecturers decided how to structure their course and what to include in terms of materials and activities. During the development and implementation of the online format, we were well aware of and also interested in exploring the differences in the lecturers' interpretation of the pedagogical principles in the different online courses and how they aligned with the online learning opportunities.

In this paper we present the findings from this first experiment of offering fully online courses for students at CBS and discuss how online teaching can support existing pedagogical principles and thereby become an integrated rather than independent form of teaching and learning. We realize that many universities have done what we have done; decided to use learning technology to provide online teaching and learning activities. This is not an attempt to provide new insights into this decision. Instead we seek to provide reflections on how online teaching can be designed and work as an integrated part of the broad array of teaching activities at universities and not as an addendum that needs to be treated differently from a pedagogical

point of view. Based on these reflections we argue that online teaching can support and develop the existing pedagogical practice at universities and help them provide students with an even broader learning experience.

The paper is organized as follows: First we describe CBS' pedagogical principles and how we see online teaching at CBS. Second, we outline the pedagogical challenges and opportunities that we have considered in relation to online teaching and learning. Third, based on the first three fully online courses, we discuss how the lecturers in the design of their courses interpreted the pedagogical principles, and how students experienced the pedagogical principles when taking the courses. Finally, we discuss the challenges of online teaching in the light of pedagogical principles before we conclude with suggestions for future research.

2 Pedagogical principles and online teaching at CBS

At CBS we have six pedagogical principles for establishing an engaging and challenging learning environment, which can stimulate our students' motivation for achieving their full potential for learning. The six principles are:

2.1 *Academic Challenge*

At CBS we are fortunate to have well-qualified students with high entrance GPA. In line with past research, we believe that continuous academic challenge for our students is a main driver for learning (e.g., Kolb, 1984). Therefore the students at CBS must be academically challenged to the full extent of their capabilities to realize their full potential. We strive to create the best possible learning environment for this by means of research-based teaching and feedback, encouraging rigorous acquisition of specific competences as well as reflection and divergent thinking.

2.2 *Interaction and Collaboration*

We see students and lecturers as partners in the learning process. A lecturer cannot make learning happen without the student's active collaboration and interaction with the lecturer as well as with other students. Furthermore, interaction is an important driver of learning (Vygotsky, 1978). Finally, the skills of interaction and collaboration are core competences for our students to learn, as they will need them in their future careers.

2.3 *Engagement and motivation*

Motivation and engagement are important drivers of deep learning (Kuh, 2003). Thus, we want our students to be motivated and actively engaged in their studies. We have a strong tradition for engaging our students in case-based learning and to work closely with industry and public sector to train our students to work with real life challenges. We encourage our faculty to motivate our students to engage in learning inside as well as outside the classroom. Since all class participation is voluntary, it is of great importance that we design motivating learning processes which students actively choose to participate in and spend time on. Finally, since we cannot force students to come to class nor feed them knowledge, it is important to develop learning spaces that allow students take responsibility for their own learning.

2.4 *Diversity and Flexibility*

CBS wants to make room for flexibility and diversity in terms of study pace, learning styles, special needs and physical location. CBS is an international business school and we encourage students to go abroad and to learn outside the walls of CBS in order to boost their learning by actively testing their knowledge (Kolb and Kolb, 2005). To support this, we need to provide flexibility as to where students can learn; whether they are on an internship, study abroad at another university, or need to spend extra time on their student job. Consequently, all

study programs at CBS are encouraged to make use of the possibilities offered by learning technologies in order to reach the different needs and preferences of students and staff.

2.5 Academic socialization

We take responsibility for supporting our students in becoming the students we would like them to be. CBS students have varying backgrounds and come from different countries with different traditions and study practices. We cannot expect them to know what is expected of them as students at CBS. Therefore, we need to support them in their transition of becoming a CBS student and the development of study skills that are known to be important for learning (Turner and Baskerville, 2013). Our aim is to welcome all students and provide the help and support they need in order for them to maximize their learning outcome at CBS.

2.6 Personal development and integrity

Based on the capacity and potential of the individual student, we support their development of personal skills. During their studies at CBS, students should not only be trained academically, but at the same time grow and flourish and develop their ethical and social competences. CBS has a strong focus on social responsibility and sustainability; responsible management education is an integral part of our core activities. This requires us to focus on individual attitudes and societal skills on top of academic qualifications.

These six pedagogical principles guide all teaching at CBS and following from this they also guided our online teaching and learning efforts. However, before we discuss the relation between opportunities of online teaching and our pedagogical principles, we describe how we conceptualize online teaching at CBS.

3 How online teaching can support pedagogical principles

3.1 Online teaching at CBS

In the following we will briefly define online courses in order to further unfold what special potential we see in the use of online teaching. We define online courses as courses in which teaching is highly mediated by learning technology with no demand for physical presence on campus. The dimensions that make online courses distinct from traditional on-campus courses are 1) the degree of physical proximity between lecturer and students and 2) the degree of lecturer-driven use of learning technology. These two dimensions create four categories of teaching as shown in figure 1 below.

Type A teaching is characterized by a low physical distance between lecturer and student as well as between students and a low degree of lecturer driven use of learning technology. It is typically based on lectures, class discussions etc. This is the type of teaching that we know from traditional on-campus teaching in classrooms. Type B teaching is characterized by teaching activities based on technologies that are used in the classroom by lecturer and students. Examples of typical technologies used in this type of teaching are clickers, games, simulations, and co-writing tools such as GoogleDocs. Type C teaching is characterized by physical distance between the lecturer and the student as well as between students. Moreover type C teaching is characterized by a low degree of lecturer-driven use of learning technology. An example of this type of teaching is individual project work, e.g. credit-bearing assignments carried out as part of internships. Finally type D teaching is what we define as online teaching. This type of teaching is highly based on technology-mediated activities outside the brick and mortar boundaries of the university by means of video lectures, discussion fora, quizzes, etc.

These four types of teaching activities can be combined in different ways in the courses that we offer our students. While pure type D teaching would comprise an online course, we define a course with type A as well as type D teaching as a blended course. Also, activities in

type B and D are often referred to as e-learning (Dohn et al. 2013), which may take place in a brick and mortar classroom setting if we combined elements of type A and B teaching.

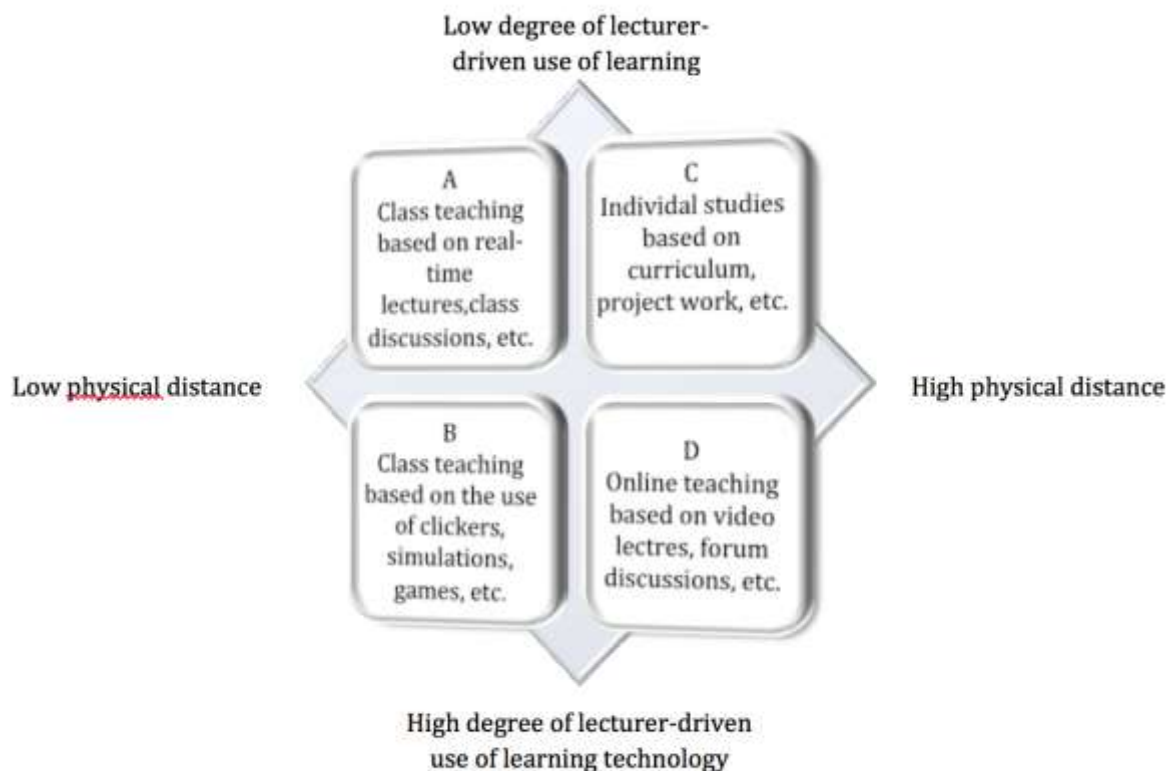


Figure 1: Four categories of teaching (Kjærgaard & Thomsen, 2015)

What is important to notice is that the specific teaching activities in the different categories of teaching can be very different, even though they might at first seem to be able to replace one another. However, a video lecture and a face-to-face lecture are not identical, since a video lecture does not provide the exact same learning space that a face-to-face lecture provides, and vice versa (Russell and Mattick 2005). This is due to the fact that video lectures provide students with the possibility to access the material in a non-linear way by giving them the option to rewind, pause, and search the content. Moreover video lectures often support interactivity by providing opportunities for students to write and share notes linked to different sequences in the video lecture. The video lecture thereby becomes a shared product that is distinct from dialogue based on-campus lectures.

Additionally, because a video lecture can be watched over and over again it will typically be more concise content-wise and the language will resemble written rather than spoken language. When on-campus lectures are systematically recorded, the lecturer will often change his or her style of expression and choice of language (Young and Moes 2013) to become more formal, less dialogue-based and less contextual. Another example of differences between otherwise seemingly comparable activities in on-campus and online teaching is the difference between the discussions that take place in a classroom and discussions online. In online teaching the right to speak in a discussion forum is not managed and distributed by a lecturer and in

principle everyone can participate. This can result in a different group of active participators and in different types of discussions than what is possible in an on-campus setting.

3.2 *The first fully online courses at CBS*

As a consequence of the differences between on-campus teaching and online teaching, online courses at CBS are built from online activities, which, on their own merits, have the potential to improve the learning of the students. Rather than replicating the teaching that takes place in the classroom, cf. the arguments in section 3.1., the aim was to explore how different learning technologies can facilitate student learning while supporting the existing pedagogical principles.

It was a strategic choice to let the first online courses be driven by lecturers' interest and engagement. We decided not to dictate a certain structure, a certain choice of activities or a certain expression. We wanted the lecturer to take control of the process but in a safe environment where pedagogical as well as technological help was offered and available on demand. In other words, it was important for us that the courses were shaped by the lecturers and that their wishes were met. This choice meant that we launched three online courses that had some commonalities with regards to activities but also quite different expressions and structures.

All three courses were 7.5 ECTS credit quarter electives that ran over the course of 8 weeks – two at the master level and one at the bachelor level. The courses were quite popular and a lot of students signed up for them (91, 107 and 47 students were admitted, respectively). All courses used spoken powerpoints or online lectures of approximately 5-15 minutes duration per topic, with several topics covered every week. In addition all courses had discussion fora, quizzes and peer grading activities. The lecturers monitored the fora and other activities and contributed on a continuous basis by inspiring, explaining, or summarizing input in the discussions.

Course A)

The lecturer designed a relatively directive process in which the course content was released at certain points in time during the week with relatively short completion deadlines. The spoken powerpoints or video lectures were released early in the week. Quizzes testing the learning objectives of the week were released at the end of the week and closed again a few days later. Content and deadlines were described in detail in a weekly schedule that was posted early in the week.

Course B)

The lecturer of this course chose a more open structure in which most content was released at the beginning of a week. Deadlines for completing the different activities were more flexible but encouraged the study groups to participate in discussions while they were most vivid. Quizzes testing the learning objectives of the week were released mid-week and left open for three retrials. In contrast to course A, content and deadlines were not described in a separate document but disclosed directly on the learning management system (LMS) course page.

Course C)

The lecturer chose to design a completely open structure in which all content was released at the beginning of the week including quizzes that were left open for unlimited retrials. In the first weeks of the course, the lecturer had suggested to the students that they ought to 1) read, watch video lectures and do quizzes at the beginning of the week, 2) complete assignments and participate in online discussions mid-week, which then 3) at the end of the week would be commented on by the lecturer. In contrast to courses A and B content and deadlines were not

described in a special document nor directly on the LMS course page. Instead the lecturer made a weekly 'welcome' recording in a more hand-held and personal style than the more formal video lectures. In these recordings the lecturer spoke freely to the students, describing the particular weeks' topic and assignments and motivated the content from a personal perspective. Hard deadlines were noted in the descriptions of the activities on the LMS platform but other than that the students were free to schedule their workload as they pleased.

3.3 *Elicitation of our experiences*

On top of the standard student evaluations based on online surveys, we decided to interview stakeholders of the three courses in order to learn from our experiences. Thus we interviewed a group of students from each course after the course had ended (and before the exam), which resulted in 11 individual interviews and one focus-group interview with 8 participants. The interviews were semi-structured, audio-recorded, and transcribed. The interviews revolved around grand-tour questions (McCracken, 1988) concerning the general perception of the course and course activities, contrasting questions (ibid.) concerning perceived difference (if any) between online and on-campus courses, and prompts (ibid.) that allowed us to address specific issues such as students' recommendations for future developments. Based on these student interviews and the experiences that follow from our close interaction with the lecturers, we now address how the online teaching was aligned with or challenged our pedagogical principles.

3.4 *Academic challenge*

In the interviews several students mentioned that they perceived their online course to be just as academically challenging as their on-campus courses. As one of the students expressed it: *"Yeah, I was actually really surprised about how effective the course was. I learned so much about [the subject] and I did not think that I would get so much knowledge out of an online course and it did meet all my expectations"* (Ruth). To some students the online setting was even more content rich than their usual on-campus courses. According to some of the students this was partly due to the different nature of online lectures. Charles put it like this: *"The lecturer - and her language - was also very focused and to the point, and sometimes I had the feeling that... I mean the lectures are just 15-20 minutes, and sometimes she said more in 20 minutes than others do in two hours. So I have never listened to it just once, so it took me 50-60 minutes for one lecture"*.

Moreover, feedback could easily be performed and saved for future reference in the online setting. According to Beck (2013, p. 46) feedback is the crucial mechanism for challenging students' understandings and the driving factor for learning. Challenging students to the full extent of their capabilities demands continuous feedback on performance and support for improvement. The ultimate summative assessment is the exam but the potential for learning can be lost if students are not assessed on a continuous basis and only receive feedback at the end of a course. Our online courses offered formative as well as summative assessment options including automated feedback in the form of quizzes or tests, and peer grading processes in which students provided constructive feedback to each other on assignments. These types of technology-based feedback enable the lecturer to provide relevant response even in large classes as the lecturer can provide another layer of feedback on the peer feedback by singling out a set of assignments that were particularly good, bad or displayed typical misunderstandings. To some of the students the idea of giving each other feedback seemed strange to begin with, but the learning outcome was considered to be very good. Being able to see how other students had answered the assignment and to reflect on this by a given set of criteria, added to their learning experience. Just like the other course activities, the peer grading assignment was voluntary.

However, students that did not participate were not able to see other students' assignments, which to some worked as a motivating factor for participating.

Thus, in sum, the online courses were able to meet the pedagogical principle of academic challenge.

3.5 *Interaction and collaboration*

Initially, we worried that promotion of dialogue in our online courses could be challenging in spite of different online options for dialogue. Thus the lecturers created several opportunities for written interaction, while we decided not to use oral interaction due to students' participation from different time zones. Also, asynchronous and written forms of communication are important tools in students' future work environments, and written dialogue provides the opportunity to more carefully consider their input and to deliver a more thorough contribution.

Following from these considerations, the lecturers used open discussion forums in which students were able to share their questions or suggestions. In an online setting this might be more legitimate than in an on-campus setting, in which this would need to be done by addressing the lecturer in class or during a break. As one of the students put it: *"In face-to-face courses you don't really write emails. If you have a question you go ask the teacher during the lecture and you will get an answer. [In online courses], every time you ask the teacher she writes the answer in this online forum so in this way you actually get answers of all the questions that were asked during the lecture, and every student can see the answer and that is a good thing I believe. And you have them in writing so if you forget you can always go back to the online forums and look at what the answer was and that is a good thing"*. (Ruth)

Moreover our lecturers created several e-tivities (see Salmon 2013) that motivated in-depth discussions about certain topics and they considered other online activities that provide the opportunity to co-create products in online group work; for example using mind-mapping tools, shared online prezi-presentations or just ordinary online shared documents. However, while the interaction between student and lecturer was regarded as efficient and positive in the interviews, the student-to-student interaction did not seem to work that well. Mathew put one of the challenges in a nutshell: *"I was in a, in a group where no one participated in the activities. The first and the second time, I tried [to participate in the group work] but then there was no response and I just thought that 'I am not gonna upload notes for them'. So I did it for myself"*. Based on the interviews this challenge was the result of the voluntary nature of the activities. Since assignments were not mandatory you risked being grouped with students that did not intend to invest time in them, which in turn affected other students' participation. However, after re-grouping efforts some of the groups managed to have fruitful interactions.

3.6 *Engagement and motivation*

At CBS large class teaching is dominant and students often attend lectures in auditoriums with more than 100 participants. It takes special efforts to engage and activate students in this setting. Often students become passive receivers rather than active participants, which is in direct opposition to the understanding that learning takes place in interaction – between lecturer and student as well as in-between students. Online teaching has the potential of creating engagement by offering a variety of learning activities that students can choose from to design their own learning processes.

An example of this was the quizzes in our online courses. They were voluntary but nevertheless heavily used and very well received by students, here expressed by Ruth: *"I participated in every single quiz. And I loved those. [...] It makes you want to read and understand the theory even more to pass the quiz. I was competing with myself because I wanted to do it even better than*

I did the week before. So I made a kind of [...] competition game". Even if students did not necessarily like the same learning activities, most of them were motivated by the simple fact that they saw online teaching as a new opportunity to be tried out: "I think just the fact that it is a new kind of teaching method is also fun and interesting" (Matthew).

Another thing to consider as far as motivation and engagement is concerned is that students already spend a great deal of time online. Online teaching and learning is thus a natural extension of other activities (Tække og Poulsen 2013). Where on-campus teaching demands a change of scenery – online learning activities can be completed when it best suits the student. Moreover learning increasingly takes place outside the walls of the university and the Internet as well as social media have become important sources of knowledge for learning. Instead of separating the learning process that takes place at the university from the learning process that takes place outside university, online teaching can bridge the two.

On top of being in charge of *where* to learn, being in charge of *when* to learn was also mentioned by the students as a motivating and engaging factor. In online teaching students actively choose to learn when they open a session, press play on a video lecture etc. This does not guarantee that learning actually takes place (von Kinsky et al., 2009), but we assume that the active choice of when to engage can create a certain level of engagement. In contrast, the active choice requests engagement and thereby online teaching is also vulnerable to lack of engagement. Students need to possess a high degree of self-motivation because the social pressure of coming to lectures is absent¹.

Some students also mentioned that their engagement and motivation were extrinsically driven as they did not want the lecturer to notice their low levels of activity, which they thought, were more easily detected in an online setting. As Frank mentioned: *"I am pretty sure that the teacher knows who participates and takes notice [in online teaching] while in class it is just like an anonymous number of people and nobody notices if you are really there or not".* The lecturers were in fact concerned with the level of engagement in the course and they did worry about the lack of interaction in the group work and how they could motivate students to engage more in the discussions in order to create a more lively course as they were afraid that too many students were lurking or did not follow the flow of the course as intended by the lecturer.

3.7 Diversity and flexibility

Diversity and flexibility were mentioned by the students in our study as important drivers of engagement and motivation (described above). The two principles are therefore highly interrelated. Because physical proximity was not necessary and because all interaction can be mediated by asynchronous learning technology, online teaching provided a high degree of flexibility in time and space. Flexibility was also mentioned by most of the students we interviewed as the main reason for choosing an online course. Quite a few students were physically located far from Denmark and did not have the option to take courses on-campus: *"I am sitting in [a country far from Denmark] at the moment and doing an internship at the embassy. So of course that was practical and the only way that I felt that I could do a course as well. So it definitely had an impact on why I chose exactly this course."* (Robert)

While flexibility in space was mentioned as a reason for choosing an online course, flexibility in time was also important; as Mathew described it: *"The best part was that I could watch the lectures when I had the time and also that it was possible to go back and use them actively in the exam period. That you could brush up on some stuff you may be forgot. That is more difficult to do with traditional lectures because you have to go back and watch your notes and the lecture slides and maybe*

¹ Participation is (with a very few exceptions) not mandatory at the Danish universities.

what you are looking for is not there” (Mathew). And Sally explained: “[Y]ou have a lot more freedom. If you have two weeks where you can focus or you have to travel with your job or do anything else, then you can just skip the class and have maximum focus the next week. And that is really good instead of being there half time or have to stress about not going to class or something like that”. (Sally)

Even flexibility in the learning process at the micro-level was mentioned by several of the students as a very positive feature of online learning; here expressed by Mick: *“You know, if you take a physical course you have one chance to hear the teacher and talk about a topic or something specific. Here you have the chance to rewind the lecture if there is something important that you need to hear several times. That is a really big benefit I think”*. And supported by Sally: *“[What] I like about the online part is that you can go back to the videos so if you have missed a point or if you have written anything in your notes [...] I like that a lot. I think it is more precise and more structured that you have the ability to go backwards and you don’t have that with normal classes at all”*.

Consequently our students benefitted from being able to participate in the teaching activities at almost any time and everywhere they saw fit. At the same time the lectures, quizzes, and discussions could be re-accessed at the students’ convenience. While this was valuable for meeting learning preferences of different students, thus providing for diversity in students learning preferences, it was also challenging at times. Ruth put it like this: *“Even though the most challenging part of the course is that you have to be self-motivated, the best part of the course is the flexibility”*.

3.8 Academic socialization

For some students, the transition process from being a high school pupil to becoming a university student can be difficult to manage. This is partly due to the high degree of freedom, which university students have - especially in a system where attendance is not mandatory - and which forces them to structure their own time. Online teaching can help students to structure time for preparation by offering a learning process, which consists of a series of smaller assignments and milestones. The lecturer may, for example, record short overviews of the topic of the week or the proposed learning trajectory, quizzes for testing knowledge of the curriculum, group work based on the topic of the week as well as dialogue fora where the intended learnings can be discussed, challenged and summarized by the lecturer or the students. As our online lecturers noticed, an online course format forces the lecturer to think harder about the students’ learning processes than own performance in the classroom in order to establish the right mixture and the right timing of the learning activities. This seems to be supported by the students we interviewed: *“I think that the online course is much more structured and you keep the time schedule” (Sally)*.

However, it is important that students are not treated as high school pupils but learn to take responsibility for their own learning, which might be an integrated logic of online courses as mentioned by Ruth: *“Because I did not go to a physical lecture two times a week, I knew that it was my own... I had to do the readings I had to do it all on my own to hopefully pass the exam. So it also puts a little pressure on me and that was a good kind of learning I think, because we are just used to going to the lectures and getting all on a silver platter, but now you actually had to do the work yourself”*. Even students who honestly admitted that they had expected the course to be easier to complete than an on-campus course, were quite positive about the online course’s structuring effect on their study process; as mentioned by Mathew: *“It’s been a good way to structure my readings, to read it throughout the course. That has been positive, definitely”*.

To conclude this section on our findings, the online courses were in most cases able to align with the pedagogical principles. As far as the last principle – personal development and integrity – is concerned, the relatively low interaction between students limited the opportunities to work with this topic. However, the topic of netiquette (how you interact in written communication on the Internet) was discussed and several students acknowledged the lecturers for their very polite comments and feedback. Likewise the lecturers felt that students were considerate and kind when they posed questions or needed help.

4 Discussion and conclusion

As we have shown above, we found that online teaching in the first fully online courses at CBS aligned with CBS' pedagogical principles. The courses provided flexibility in learning and connected learning outside of CBS to learning on-campus, they offered a broader set of activities for building interesting and varied learning processes and they motivated and engaged students. Likewise online teaching supported dialogue and interaction and if the course design guided students' learning processes, students were able to take responsibility for their own learning.

We found however that the balance between structure and flexibility proved to be a dilemma to many students. They enjoyed and had also, in many instances, chosen the online courses exactly because of the flexibility that they believed the course would provide. However, they also liked the structure and the structuring effect of the way the courses were run, which to some degree limited flexibility.

For example, the clear structure in course A worked to keep students on track. As some assignments and tasks were not released until mid- or late week and as completing them was a prerequisite for solving the quiz at the end of the week, the students had to participate in the course more frequently than in a lecture based on-campus course. Thus, not surprisingly, a repetitive theme in the post-course student interviews was the revision of their expectations concerning the flexibility and workload in an online course. Their experience was somewhat contrary to their expectations; most of them experienced that they had to work as structured and hard or even harder during the week. As expressed by Michael: "*Just because it is an online course doesn't mean that you have less work to do than just a regular course. Because I think the amount of effort is pretty much the same*". And Petra mentions: "*This course was much more structured. The lecture was opened on the Monday and then you had to watch it before Wednesday because then you had the assignment. I think it was very much like an on-campus course. This course could have been given as an on-campus course just as well. I would have liked it to more flexible as I am also travelling in the semester*".

All lecturers communicated the structure of their particular course to make sure that students knew about it. However, the structure had its price as several students from all three courses commented on the lack of flexibility that it caused and which hindered a more individually designed learning process. Also, in spite of the provided information, the structured format came as a surprise to some students, as described by Mathew: "*I think that you should make it more clear, I know that you cannot force people to do the activities but it think you should make it more clear in the course description that there are activities that should be done throughout the week because I think a lot of people were surprised by that. I have talked to some of the others who were enrolled in the course and they were surprised by that. I think it is a good idea but people just need to be aware of it*". He continues to talk about the workload he experienced: "*I think that when all comes to all I have spent the same workload but it has been a bit different because in other courses, in traditional courses you may not read that much throughout the course, you do it when you have the exam. And I've*

been.. It's been a good way to structure my readings to read it throughout the course. That has been positive, definitely".

Thus, structure compromised flexibility, which seemed at odds with students' expectations in online course settings. However, structure also provided options for improved learning outcomes and was therefore welcomed by several students once they had revised their initial expectations. Also, it is evident from the interviews that students realize that flexibility is not entirely beneficial – there is a flip side of the coin as also mentioned by the focus group: *"A positive feedback about this course is the fact that you are able to structure your homework more or less as you want to. [...] So it is very flexible compared to regular lectures. [...] This flexibility also means that I know for a fact that a lot of my fellow students are simply just pushing everything up to the very end of the course when the exam paper is supposed to be written, so a lot of them will be inactive in the course, making the participation a whole lot less".*

To sum up, our conclusion is that online teaching can align with our pedagogical principles, if the lecturer takes responsibility for designing a coherent reflective learning process that challenges the students and facilitate students to challenge each other. Moreover, having a mix of online and on-campus courses in the course catalogue further strengthens the implementation of our pedagogical principles since it adds to diversity of teaching and learning processes at our institution.

5 Research limitations and direction for future research

The empirical study of this paper is limited to three fully online courses at a single university. We do not know whether our findings are replicable in other settings or if they are linked to the special status of the courses: they were the first fully online credit courses at our institution, the lecturers were highly motivated and had volunteered to develop the courses, the students were excited about the new course format, and the lecturers received special attention from support staff. All of these factors may have had an impact on how these courses were designed and, following from this, how they aligned with the pedagogical principles. However, since the aim was to explore whether or not online teaching could in fact support our pedagogical principles - and not whether *any* online course would do that - we can conclude that this was in fact the case.

While we have focused on how the students experience online teaching, future research should also address the role of the teacher and how it changes when teaching is conducted online. In particular it is interesting to understand how the teacher can facilitate student learning by combining online teaching with on-campus classroom teaching in order to create the best possible learning opportunity for the students. While technology supports some types of learning, others types might not benefit from technology – the balance and mixture of technology supported teaching with on-campus face-to-face teaching and its impact on alignment with pedagogical principles needs to be explored in future research.

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