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Teaching on Hybrid Courses

Insights from Commercial Online ICT-Training

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Abstract: Information and communication technology (ICT) has evolved rapidly during the last decades. These technological advancements have enabled new ways of teaching and learning, such as online courses, where students attend training using their own computer equipment. Previous studies have shown that the student satisfaction and learning outcomes do not differ between the classroom and online students. However, our previous study conducted on hybrid courses, where part of the students was present in a classroom and part are participating online, revealed some issues related to teaching methods and technical difficulties. In this study, we researched how teachers of a commercial ICT-training organisation feel teaching on hybrid courses. Results revealed that teacher doesn't feel comfortable when teaching in hybrid courses. This is mainly because it was difficult for teachers to pay attention equally to the classroom and online participants. Also, technical difficulties occurring during the course are disturbing the teaching.

1 INTRODUCTION

During the last two decades, the information and communication technology (ICT) has evolved rapidly. This has provided new technical solutions for attending and delivering courses online. Nowadays virtually all laptops have a built-in microphone and web camera, allowing students to participate in online courses using a standard affordable equipment.

Online training has had a lot of interest during the last few years. For instance, online training is cheaper than traditional training (Jung, 2005) as there are no travelling and accommodation costs involved.

The previous research conducted on online teaching has concluded that there are no differences in learning outcomes (Johnson *et al.*, 2000) or student satisfaction (Allen *et al.*, 2002) between the classroom and online participants. There has been a critique of this type of studies (Merisotis and Phipps, 1999), as some studies are comparing two independent samples, one for classroom and one for online participants. This kind of research setup does not capture the situation where you teach both classroom and online participants at the same time.

In our previous paper (Syynimaa, 2017) we studied the student satisfaction on hybrid courses

having both classroom and online participants. We found no differences in student satisfaction between the classroom and online students.

The aim of this paper is to study how teachers feel teaching on hybrid courses.

1.1 Hybrid Course

Let's first define some key concepts used in this paper. There are various learning methods, which can be categorised into four archetypes; traditional learning, e-learning, participatory learning, and facilitated learning community (Leppänen and Syynimaa, 2015). *Traditional learning* takes place in a classroom, where both students and teacher are co-located in the same physical space. *E-learning* allows students to learn regardless of time and place. E-learning is "offline" training, where the teaching material is produced beforehand, and the interaction is asynchronous, mainly via email or discussion forums.

We define *online learning* as a traditional learning method, supported by technology. If there are both classroom and online students, we call them *hybrid courses*.

Human Learning Interface (HLI) is the set of “interaction mechanisms that humans expose to the outside world, and that can be used to control, stimulate and facilitate their learning processes” (Koper, 2014, p. 1). In practice, HLIs are equal to our senses, such as, seeing, hearing, and touching.

1.2 Challenges in Online Learning

Online learning limits the available senses to seeing and hearing, so also the number available HLIs are reduced to two. This affects both learners and teachers. Learners may not be able to learn as effectively due to a limited number of HLIs. For teachers, the effect is even bigger. Due to a limited number of available HLIs, the teacher is not able to assess effectively whether the learning has occurred. For instance, they cannot see learner’s gestures or body language, which is an important communication method for humans. Thus, teachers are not able to adjust their teaching in the same way as they can do in the classroom.

2 METHOD

The data used in this paper is collected from a leading Finnish commercial ICT-trainer, *TrainingCorp*. *TrainingCorp* provides ICT-training to Finnish public and private sector organisations, and individual consumers. Their training ranges from end-user and ICT-specialist training to CxO level management training. Training is provided in the form of full-day instructor lead courses (ILT) lasting from 1 to 4 days. Since 2015 *TrainingCorp* has provided an online participation option, where learners participate in courses using either Microsoft Skype for Business (SfB) or Adobe Connect Pro (ACP).

The data were collected using a web-based questionnaire in May 2017. The questionnaire was sent to *TrainingCorp*’s trainers having teaching experience on hybrid courses. The questionnaire had three parts: background information, teachers’ opinions on teaching on a different type of courses, and open-ended questions regarding hybrid courses. First, for demographic data, we asked teachers’ age, the number of teaching years, and the teaching substance area. Next, we asked teachers to rate how comfortable they feel teaching in the classroom, online, and hybrid courses, using a scale from 0 to 5. In the last part, we asked the following open-ended questions:

- **Arrangements.** Describe the arrangements of the hybrid course(s). For instance, what software and equipment were used.
- **Teaching on Hybrid Courses.** How do you feel teaching on hybrid courses, when compared to the pure classroom and/or online training?
- **Teaching Challenges of Hybrid Courses.** Have you felt teaching on hybrid courses challenging? If so, please describe.
- **Technical Challenges of Hybrid Courses.** Have you experienced any technical challenges on hybrid courses? If so, please describe.
- **Developing Hybrid Courses.** How would you developed teaching methods and technology on hybrid courses?
- **Free Comments.**

3 RESULTS

3.1 Teachers Background Information

Teachers’ ages and teaching years are presented in Table 1. Teachers are very experienced having, on average, 19 years of teaching experience. The age distribution of the teachers ranges from 39 to 57 years, having a standard deviation of 6 years. Teachers’ teaching experience is more dispersed, ranging from 4 to 35 years with standard deviation of 10 years. This is partly explained by the fact that many teachers have previously worked in the industry before joining the *TrainingCorp*.

Table 1: Teachers’ age and teaching years.

Statistics ($n=11$)	Age	Teaching years
Mean	48	19
Std. Deviation	5.9848	9.9709
Min	39	4
Med	47	20
Max	57	35

Table 2: Teachers' training substance areas.

Teaching area ($n=12$)	n
Knowledge workers	8
Technology (software)	4
Technology (infrastructure)	3
Management and leadership	1
Sales, marketing, and communications	2

Teachers are teaching courses according to their substance area. Training areas and the number

teachers are presented in Table 2. Some teachers are teaching only one substance area, some two or more.

Teachers feel very comfortable when teaching traditional classroom courses (see Table 3). However, teaching online and hybrid courses divides opinions. For online courses, the average was 3.6 with a standard deviation of .9962. This indicates that some teachers do feel very comfortable whereas some do not. Similarly, for hybrid courses, the average was only 3.1 with a slightly smaller standard deviation of .7930. None of the teachers rated teaching on hybrid courses as five, which clearly indicates that teaching on hybrid courses is not comfortable.

Table 3: Teaching on different course types.

Statistics ($n=12$)	Class	Online	Hybrid
Mean	4.8	3.6	3.1
Std. Deviation	.3892	.9962	.7930
Min	4	2	2
Med	5	3	3
Max	5	5	4
Mode	5	3	3

3.2 Arrangements

As some of the students are present in the classroom, and some online, hybrid courses require special arrangements.

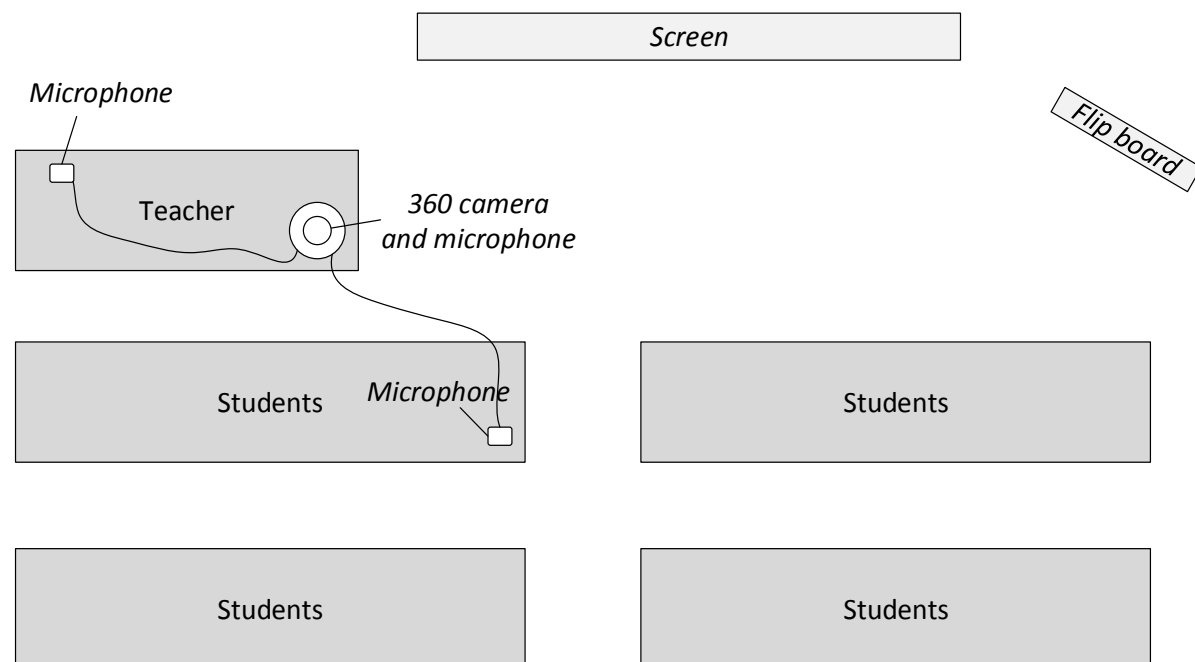


Figure 1: Typical hybrid course classroom setup.

According to teachers, the classroom setup does not differ much from the traditional classroom taught course. The only difference is that there are a camera and microphone located in the classroom so that online participants can see and hear teaching. The typical setup used in hybrid courses is illustrated in Figure 1.

Table 4: Online teaching software.

Tool ($n=10$)	n
Adobe Connect Pro	8
Skype for Business	6
Both	4

Another difference when compared to traditional classroom training is the software used to interact with online students. The TrainingCorp offers two solutions for both online and hybrid course training; Adobe Connect Pro and Skype for Business. Teachers are using either one of them, or both, as presented in Table 4.

3.3 Teaching on Hybrid Courses

As mentioned earlier, teachers do not feel comfortable teaching on hybrid courses. According to teachers, teaching is more challenging than in pure classroom or online training.

The most challenging is the need to pay attention to both classroom and online students. As one of the teachers stated, “it is difficult to pay attention to students equally” (T2). Another teacher mentioned that the teaching is adequately comfortable, but the teaching requires a lot of extra effort. The teacher would like to offer a learning experience with a deep interactive communication, but the online participants can utilise only chat or voice which rules out the non-verbal communication.

Teaching technology is in a central part of online and hybrid courses. Working technology is therefore crucial to a successful course. One teacher stated that “if there are no technical problems, [teaching] is Ok. But if there are problems, the hassle will follow.” (T7). When technical problems occur, teachers feel that the classroom students need to tolerate the extra interruptions and tuning. One teacher sees hybrid courses as a “compromise where classroom students don’t get the full learning experience due to online participants” (T10).

3.4 Teaching Challenges of Hybrid Courses

Teaching challenges are mainly related to two separated student groups, each requiring a different set of teaching methods. Even though teachers are doing their best to pay attention to both classroom and online students, “in reality the equality is not achieved as the classroom group takes the major part of [teacher’s] attention” (T1). This seems to be connected to the lack of interaction with online students: “online participant depends on audio only...mimics etc. activity-based communication is totally left out” (T4). Due to this, teachers are not able to assess how online participants are learning, and consequently, they are not able to react and change their teaching accordingly. Sometimes teachers may “have not a clue what online participants are doing: are they following the teaching, are they bored or what” (T2).

The lack of interaction between online students forces teachers to use alternative teaching aids. For instance, most of the teachers are accustomed to using a flipboard. On hybrid courses, online participants are not able to follow what is drawn to the flipboard (Syynimaa, 2017). “Visualisation methods have to be chosen in terms of online participants (a whiteboard, a flipboard, and gestures won’t usually work)” (T2).

One major method teachers use while teaching is exercises. Teachers feel that the most challenging problem is the exercises done with computers. Teachers are able to give advice and support for

classroom students easily, but for online students it is difficult: “I have sometimes had to rely on screenshots sent via email [to give advice to student]” (T8). Another teacher feels that especially interactive group exercises are the most challenging, as in the classroom it is relatively easy to assign students to groups and let them work with a flipboard. But with online participants “it is not as natural, especially if they are strangers to each other” (T3).

3.5 Technical Challenges of Hybrid Courses

The technical challenges teachers have faced during hybrid courses fell under three categories.

The biggest challenge is the connectivity issues. The connectivity issues include network problems, such as a slow or unreliable internet connection, and firewall problems. These are very disturbing and frustrating, because “teacher is not able to help with [online participant’s] local connection problems” (T3). When there are multiple online participants, the troubleshooting of connectivity issues will take time from the actual training.

Another major technical challenge is related to the communication software used for teaching. Sometimes students are dropped off from the teaching session, or they lose audio or video. The teacher may not notice this and online participant may miss part of the training.

The third major issue is the software which the course is about, such as Microsoft Office or Exchange server. In the classroom, all required software is installed beforehand by the teacher or support staff. Online participants are responsible for installing the required software, which is usually problematic. As the one teacher stated, “online participants often have technical challenges installing the learning environment” (T1).

3.6 Developing Hybrid Courses

Development suggestions for hybrid courses are focusing mainly on challenges mentioned in previous sub-sections.

The most challenging for teachers was the lack of interaction between online participants. Online participants could use their web cameras to share their pictures, so that “there would be a better connection to that person” (T5). One teacher even suggested that there should be one monitor per online participant on the sidewalls, so that the “teacher, who has the eye contact and interaction with the classroom students,

could see the online participants in the same way” (T5).

The teaching aids should support both student groups on hybrid courses. Many teachers are using flipboards to visualise taught concepts and “that should be in the form which would suit both groups” (T9). One teacher suggested using pads or laptops with a touchscreen so that they could share their drawings simultaneously to both groups. Another teacher suggested using Smart Boards, which allows using the whiteboard in the classroom and sharing it with online participants.

Teachers had many suggestions to deal with technical challenges. One teacher stated that “the best solution would be to have separate courses. Another teacher suggested that there should be an assistant for online participants, who would provide technical support, chat, following exercises, etc.” (T2). One suggestion was that the equipment should be standardised and preinstalled in every classroom so that all the time-consuming hassle with equipment could be avoided: “technology should be 100% bulletproof” (T10). These suggestions indicate that successful hybrid courses would need extra investments when compared pure classroom or online training.

Finally, one teacher suggested that time should be reserved for handling different activation and teaching methods for the different groups. In other words, using the course developed for classroom or online courses does not work as such in hybrid courses. There should be less substance content and more time reserved to deal with classroom and online participant teaching differences.

4 DISCUSSION

Our earlier research and literature indicated that there might be certain teaching challenges on hybrid courses. First, teaching two different kinds of student groups, namely classroom and online students, at the same time was anticipated to be challenging. Second, the technical challenges were anticipated to be a challenge.

Our research provided support to earlier findings: teaching classroom and online participants is, indeed, challenging. Teachers felt that they were not able to give enough attention to online participants because their focus was in the classroom. Moreover, some teachers felt that the classroom students were not given an ideal learning experience because teaching methods and techniques were limited due to online participants.

The technical difficulties were found to be challenging, but also disturbing. Dealing with technical problems, sometimes occurring in the middle of the training, took a focus off from the training.

4.1 Limitations

Data for this research was collected from a commercial ICT training organisation. As such, the results may not be generalisable to other contexts. However, teaching and technical challenges ought to be universal in nature. The number of respondents ($n=12$) does not allow to draw strong statistical conclusions so the results should be treated as indicative.

4.2 Contributions to Practice

The results revealed what kind of challenges teachers face when teaching on hybrid courses. This helps other teachers to prepare for teaching in similar settings.

4.3 Contributions to Science

The study confirms findings of previous studies what comes to teaching and technical challenges. Our research gave insights on how experienced teachers feel teaching on hybrid courses. These findings could be used as a basis for developing new pedagogical theories and practices to be used in hybrid courses.

4.4 Directions for Future Research

The findings pointed out some issues with used teaching methods and aids. One interesting area for the future research would be to develop teaching methods and aids that would be suitable for hybrid courses.

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