

Chapter 8

Development, Implementation, and Effectiveness of Using an Online Lesson in Visual Arts Education: A Design- Based Study



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Abstract This chapter critically reflects on the development, implementation, and evaluation of an online lesson. This online lesson was transformed from a 3-hour session of a course entitled “Aesthetics and Art Criticism” originally delivered in a direct in-person contact mode. The course was for a group of Year Three Bachelor of Education students specializing in visual arts. Blending online lessons with traditional face-to-face teaching has become increasingly common, especially in the higher education context with adult learners. The online lesson consisted of narrated PowerPoint presentations, a quiz, Coursera participation, and construction of a Wiki document. The chapter begins with a discussion of the possibilities, advantages, and examples of online lessons. The second part of the chapter is a description of the methods used to create, conduct, and evaluate an online lesson. A design-based research was the methodology used to develop, experiment, and reflect on the online lessons in three iterations. The last part of the chapter is a presentation and discussion of the findings obtained. Views on the benefits of the online lesson, areas where improvements could be made, and student preferences for the types of activity were collected through an online questionnaire consisting of a survey and open-ended questions. Convenience, flexibility, and autonomy of learning and the reviewability of online lessons were the main advantages recognized by the students. The students also valued the opportunity to learn through public open learning courses and collaboratively construct resources which would be useful in their future teaching. Problems were identified, and ways of improvements in areas including difficulty in downloading, lack of interaction, incomplete participation, and easy distraction were discussed.

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8.1 Introduction

This chapter is a critical reflection on the development, implementation, and evaluation of an online lesson in visual arts education. The chapter begins with a discussion of the possibilities and challenges of blending online lessons with traditional face-to-face teaching, an increasingly common practice in the higher education context. Several advantages of online lessons have been identified: flexibility that transcends learning time and space; independence, autonomy, and ownership of learning; engagement in interactive learning and knowledge construction; and the facilitation of the liberation and dissemination of knowledge. The second part of the chapter is a description of the methods used to create, conduct, and evaluate an online lesson. Issues such as the search for and solicitation of examples of digital learning in visual arts, considerations of the type of content which would be appropriate for delivery in a digital format, the development of online learning activities and tasks, collection of student feedback, and the effectiveness of online lessons are addressed. In addition to providing the theoretical background to online teaching and learning, the above discussion includes an example of the use of museum resources in visual arts education to illustrate the case. This online lesson is one session of a course entitled *Aesthetics and Art Criticism* developed for a group of undergraduate students enrolled on a Bachelor of Education programme. Design-based research, a method of systematically identifying improvements from experiments in learning situations, was the methodology employed to identify the effectiveness, areas to be improved, and student preferences for the activities and tasks of the online lesson. The last part of the chapter is a presentation and discussion of the findings obtained, followed by a reflection and conclusion.

8.2 Background

8.2.1 *Why Online Lessons?*

Although there are numerous ways in which the latest digital technology can be introduced in teaching and learning, the use of online lessons to replace some of the face-to-face lectures that take place in traditional classroom settings has become increasingly common, particularly with adult learners in higher education (Bullen & Morgan, 2015; Garrison & Kanuka, 2004; Meyer, 2014; Sun & Chen, 2016). There are several advantages of engaging students in an online lesson over a traditional lecture. With an online lesson, students can learn wherever and whenever they like. Online lessons allow *flexibility* that transcends time and space in learning. Because of the self-paced nature of online lessons, students' *independence, autonomy, and ownership of learning* are also fostered. Online lessons usually involve media-oriented learning materials and tasks; students are provided with various opportunities for *interactive learning and knowledge construction*. The convenience

of disseminating an online lesson also facilitates the *liberation of knowledge*. Online lessons have the potential to reach a worldwide audience.

In 2016, my university (The Education University of Hong Kong) embarked on a university-wide project entitled *Blended Learning for University Enhancement (BLUE)* to promote digital teaching and learning. The project promoted a “One Course One Online Lesson” initiative and encouraged faculty members to develop high-quality online lessons using the pedagogical features of the Moodle Learning Management System. In general, all courses at my university consist of 39 h of face-to-face teaching (thirteen three-hour sessions) and account for three credit points. With the support of the project, I redesigned one lecture in one of my courses as a 3-hour online lesson, and it became a replacement for the traditional lecture. An online lesson is not simply an unedited video recording of a lecture presentation that is uploaded for student use at an electronic learning platform. At my university, an online lesson must contain all the three activities listed below to engage students (Table 8.1).

8.2.2 Examples of Online Lessons

The first step in the preparation of my online lesson was to look for examples of online learning in the field of visual arts. *Knowledge and Education Exchange Platform (KEEP: keep.edu.hk)* is a Hong Kong University Grant Committee initiative to support “the development of innovative teaching and learning with cutting-edge technology” (retrieved from the KEEP website). It contains rich educational resources that users can easily find, subscribe to, and access. *Massive Open Online Course (MOOC)* is another platform that provides open access to digital courses created by academics and public organizations. I visited the following free online courses related to visual arts found by searching the KEEP:

- Coursera – *Sexing the Canvas: Art and Gender*
- CourseBuilder – *Information Visualization MOOC*

Table 8.1 The three types of activity that constitute an online lesson

Activity	Aim	Example
Resource-based	To provide information and materials for students to learn and understand	PowerPoint presentation Notes Demonstration video
Response-based	To capture student response or feedback for formative and summative assessment purposes	Short quiz Questionnaire Assignment
Collaborative	To allow students to collaborate and construct knowledge	Forum Wiki Google Forms

- FutureLearn – *Commercial Photography: Still and Moving Image*
- edX – *Western and Chinese Art: Masters and Classics*
- ewant – *Postmodern Metropolitan Movies: Taipei*
- XuetangX – *Appreciation and Analysis of European Paintings between 1400 and 1800*

The above courses are open online courses that are developed for public users from all kinds of backgrounds. Each course may consist of five to ten sessions, and participants will need an extended period to complete it. They are very different from the online lesson that I wanted to develop in terms of user background (in my case, targeted), course duration (in my case, short), and user engagement (in my case, compulsory). However, these examples gave me ideas about ways of structuring content, creating self-learning materials, evaluating learning, and collecting feedback on an online lesson. The online lesson that I developed was close to Fox's (2013) definition of a Small Private Online Course (SPOC). The lesson was "an online course that offers a limited number of places and therefore requires some form of formal enrolment" (Kaplan & Haenlein, 2016, p. 444). This was exactly the situation of the students who were taking my course. My online lesson can be classified as "University-Based Online Education" and the participants as "individuals enrolled in universities for the purpose of obtaining degrees and diplomas" (Sun & Chen, 2016, p. 161).

8.3 Methods

8.3.1 Design-Based Research

Design-based research (DBR), a method which "is used to study learning in environments that are designed and systematically changed by the researcher" (Barab, 2014, p. 151), was the methodology used for this study. DBR has been used in a large number of studies in the field of education (Anderson & Shattuck, 2012). The main reason for adopting DBR was its emphasis on translating theories into practice in authentic educational contexts, which is always a challenge in educational research (Shah, Ensminger, & Thier, 2015). The pragmatic nature of DBR was another reason, since it would allow me to employ "an eclectic approach in the design and implementation of research methods by drawing on all research designs ... depending on the immediate need within the DBR study" (Shah et al., 2015, p. 159). The final reason for adopting DBR was its characteristic of incorporating progressive refinement. As noted by Pool and Laubscher (2016, p. 42), "design-based research is a long-term approach which contains multiple iterations of design, development and revision." Every reflection and iteration included in an experiment will provide the investigators with more accurate and meaningful results. The above features of DBR meant that it was possible for me to try out the experimental online lessons several times, with a view to improving the ways in

which it could be implemented at my university. Specifically, the aims of the study were to:

1. Develop and implement an online lesson for a group of undergraduate students specializing in visual arts education.
2. Examine the effectiveness of the online lesson and improve it over three iterations.
3. Collect and analyze data provided by students on the strengths and weaknesses of the online lessons, their preferred activities and tasks, and areas where improvements could be made.
4. Reflect on the implementation of the lesson and propose recommendations for future practice.

8.3.2 Development and Implementation

8.3.2.1 Considerations of Which Course/Lecture to Implement an Online Lesson

Instead of developing a new course that relied entirely on non-face-to-face learning, I chose one lecture of a course I am currently teaching and transformed that lecture into an online lesson. It was a form of blended learning in the sense that the online lesson would complement the rest of the traditional lectures that made up the course. A reduction of sitting time or face-to-face contact are features of some of the definitions of blended learning (Graham, 2013). Therefore I decided that the newly developed online lesson would replace the face-to-face lecture. Students were freed of 3 h of direct contact time, but they were expected to complete all the online activities and tasks that would take approximately the same amount of time. The following were my considerations regarding which course to choose and which lecture to develop into an online lesson.

Course Content That Is more Theoretical than Practical

I am a visual arts teacher. I teach courses on theories such as aesthetics and art criticism as well as practical studio courses such as ceramics and sculpture. I considered that most of the digital learning activities would be more appropriate for the learning of theoretical knowledge or two-dimensional art. Much of the content of three-dimensional studio courses rely on demonstration and personal coaching. Some examples of online teaching in visual arts can be found, but most of them are in areas such as visual culture (Bajardi, Della Porta, Álvarez-Rodríguez, & Francucci, 2015), digital communication (Buhl & Ejsing-Duun, 2015), drawing (Miiller, Cohen, & Smith, 2013), and arts appreciation (Lai, 2002; Wohlpart, Rademacher,

Karakas, Courcier, & Lindsey, 2006), and not in three-dimensional studio arts learning that requires the manipulation of tangible media and materials.

Course Content That Requires Relatively Little Teamwork/Discussion

The major aim of the online lesson was for the students to view all my PowerPoint presentations and to complete the online tasks. Online lessons may involve interactive activities that engage students in teamwork and discussion, but it is difficult to guarantee participation unless they are given marks or grades. Therefore I chose to structure all the activities so that the students could complete them on their own. I did include some collaborative activities in the online lesson, but the collaboration was more in the nature of individual contributions that would result in the construction of collective resources that could then be used by all students.

Course Content That Can Be Simply Evaluated

Ensuring that all the students participate in the lesson and that their learning is properly evaluated are two of the challenges in implementing an online lesson. As my online lesson would replace one face-to-face teaching session, it was important to engage the students in some small-scale assessment activities to make sure they understood the content and to ensure that their understanding could be evaluated by simple measures such as quizzes or asking them to provide reflective accounts or short reports.

8.3.2.2 Description of the Course and the Lecture

Finally, I decided to select one lecture from the *Aesthetics and Art Criticism* course and redesign it as an online lesson. The course was for a group of Year Three Bachelor of Education students specializing in visual arts. The class sizes of the three iterations that took place in 2016, 2017, and 2018 were 44, 27, and 31 respectively. These students would become primary or secondary school teachers on graduation. The aim of the course is to develop students' ability to make informed responses to visual artworks and to articulate the roles of aesthetics and criticism in art learning. By providing them with knowledge of aesthetic and art criticism theories, the course equips students with the concepts and skills that are required to teach the domains of art appreciation and criticism. Among the 13 meetings (3 h each) that make up the whole course, there are ten face-to-face lectures, one museum visit, one group presentation, and one consultation session. The lecture on the functions of art museums and using museum resources was selected to be transformed into an online lesson.

8.3.2.3 Students' Engagement and Activities

The online lesson consisted of three parts and was delivered through the Moodle platform. Each part began with a narrated PowerPoint presentation and was followed with activities designed to consolidate and evaluate the students' learning. Students were required to view and listen to the PowerPoint and participate in the follow-up activities that included answering a quiz, writing a journal, and constructing a Wiki. All six parts (three presentations and three tasks) of the online lesson were structured as prerequisites for the next part, and therefore the students needed to follow the sequence exactly. The first online lesson was implemented in the 2015–2016 academic year. After the students had completed the online lesson, they filled in a questionnaire consisting of 15 questions to provide feedback on the effectiveness of the lesson, the major benefits, and areas where improvements could be made. After the first round of implementation, I revised the presentation and activities of the lesson. The lesson was implemented for the second and third rounds in the 2016–2017 and 2017–2018 academic years, respectively. The presentation content, follow-up activities, and revisions made are displayed in Table 8.2. Major revisions included changing the format and content of the PowerPoint presentations, introducing Coursera participation, and providing clearer and more detailed guidelines regarding how to complete the activities.

Table 8.2 Content, activity, and major revision of the online lesson

Part	PowerPoint presentation	Activities/evaluation	Major revision made
1	Typography of museums Different orientations of the function of art museums Philosophy of art museum education	Quiz – 5 multiple choice questions	More photos in the PowerPoint
2	Two functions of art museum education Planning of museum visit – pre and post-visit activities	Short reflective essay – reflect on a meaningful museum learning experience in not less than 100 words	Enroll on a Coursera course, attend the Week 2 section and complete a quiz
3	Planning of museum activities Observation and questioning techniques in museums	Wiki – locate one online educational resource of an art museum website. Write an introduction and comment on its usefulness in around 100 words. Students are able to view each other's entries, facilitating the construction of a shared list of resources	More detailed instruction on how students completed the Wiki activity

8.3.2.4 Changes in the Second and Third Iterations

In response to the students' comments, more images and videos relevant to the theme (the use of museums in teaching art appreciation and criticism) were included in the first PowerPoint. For example, images of different museum settings, artworks as illustrations of museum philosophies, videos of virtual visits, and examples of online museum resources were added.

The second activity – writing a short reflective essay on a learning experience in an art museum – did not receive positive feedback from the students. I decided to replace the activity with participation in a Coursera course in the second iteration. During the search for examples of online lessons, I found a Coursera course entitled *Art & Inquiry: Museum Teaching Strategies For Your Classroom*. The course has been created by the New York Museum of Modern Art. It contains numerous examples of ways to engage people in learning in the museum setting, and it is highly relevant to my course content. I therefore asked the students to enroll on the course and experience participation in open course learning. Specifically, students were required to watch the Week 2 videos and complete a quiz on the content of the videos.

Additional feedback collected from the students indicated that they would like to engage in interactive activities such as forums or discussion boards. Therefore, a discussion forum was set up so that the students could share memorable or difficult experiences in art museums. They were encouraged to upload photographs of museums that they had visited recently and provide a caption or write a few lines about it. Participation in the forum was voluntary, however.

8.3.3 Data Collection and Analysis

An online questionnaire consisting of a survey and open-ended questions was administered to all those students who had enrolled on the course. The students were asked to complete the questionnaire within 1 week after the online lesson. The response rate was high, with more than 93% of the students responding in each round. As their completion of all the three tasks of the online lesson was the requirement for them to be marked present for the lesson, in general the students had a high motivation to complete the tasks as well as the questionnaire. Descriptive statistics were generated from the survey, and a thematic analysis was conducted of the responses to the open-ended questions.

8.4 Findings and Discussion

Student feedback was collected on the content, implementation, and usefulness of the online lesson through the Feedback function in Moodle. In the form of an online questionnaire, Feedback questions 1 to 10 were multiple-choice questions on the

effectiveness and implementation of the online lesson. Questions 11 to 15 were open-ended questions designed to collect the students' views on the benefits of the online lesson, areas where improvements could be made, and their preferences for the types of activity included in the lesson.

8.4.1 Perceived Effectiveness

Eighty-eight percent of the students agreed or strongly agreed that the content and activities of the online lesson were useful. Around 70% said they would like to have one or two online lessons in the course. The students enjoyed the flexibility and convenience in time and space of having an online lesson. They also liked the opportunity to revisit the PowerPoint if they wished. A summary of the results obtained from questions 1 to 10 is presented in Table 8.3.

8.4.2 Perceived Benefits

From the results of the evaluation and feedback from the students, it is clear that the online lesson had brought them benefits in learning. Convenience, flexibility, and autonomy of learning and the reviewability of online lessons were the main advantages recognized by the students. They were able to determine the time, place, and pace of their own learning. They also found the new learning format exciting, and it motivated them to engage in the online activities.

8.4.2.1 Flexibility of Time and Space to Learn

Among the qualitative comments collected from the questionnaire, a flexible learning time and space were the items most commonly mentioned by the students. They valued the opportunity to learn beyond the fixed timetable and the campus boundary. For example, one student mentioned that "you can spend as much time as you like [on the online lesson] and [do it] whenever you want, and this makes me concentrate on the content." Another student mentioned, "I can complete the tasks when I am free." Our university is situated in a rather remote area of Hong Kong, and it can take some students more than 90 min to travel to the campus. University campus accommodation is usually available only to year one students and to those students who participate actively in hall activities. These students therefore highly appreciated being able to learn in a comfortable space and at a time convenient to them. A reduction in the time spent and in the cost of traveling was another reason, as reflected in responses such as "no need to come back to the campus and it saves time," "can learn anywhere," and "can do it at home."

Table 8.3 Results of online questionnaire

	Year of implementation	2016	2017	2018	Mean
	Number of students enrolled on the course	44	27	31	34
	Number of respondents	42	25	29	32
	Response rate	96%	93%	94%	94%
	Number of questions	15	15	15	15
1.	Have you completed all the activities of the online lesson?				
	Yes	100%	100%	97%	99%
	No	0%	0	3%	1%
2.	In general, I found the content and activities of the online lesson useful.				
	Strongly agree	21%	24%	23%	23%
	Agree	74%	60%	62%	65%
	Neutral	5%	12%	10%	9%
	Disagree	0%	0%	4%	1%
	Strongly disagree	0%	4%	1%	2%
3.	Which part of the content did you find most useful?				
	PowerPoint presentation 1	52%	56%	38%	49%
	PowerPoint presentation 2	29%	32%	24%	28%
	PowerPoint presentation 3	19%	12%	38%	23%
4.	Which activities did you find most useful?				
	Quiz	60%	40%	28%	^
	Journal (2016)/Coursera (2017 and 2018)	14%	52%	55%	^
	Wiki	26%	8%	17%	^
5.	How much time (in total) did you spend completing the online lesson?				
	Less than half an hour	5%	0%	0%	2%
	Half an hour to less than 1 h	12%	4%	7%	8%
	1 h to less than 2 h	43%	12%	41%	32%
	2 h to less than 3 h	30%	32%	38%	33%
	3 h to less than 4 h	10%	20%	10%	13%
	More than 4 h	0%	32%	4%	12%
6.	Did you complete all the activities at one time or work on them on a few different occasions?				
	1 time	14%	4%	35%	18%
	2 to 3 times	52%	64%	41%	52%
	4 to 5 times	24%	24%	24%	24%
	6 to 7 times	10%	8%	0%	6%
	More than 7 times	0%	0%	0%	0%
7.	The instructions for the online lesson are clear and easy to follow.				
	Strongly agree	22%	24%	35%	27%
	Agree	57%	52%	41%	50%
	Neutral	19%	20%	24%	21%
	Disagree	2%	4%	0%	2%
	Strongly disagree	0%	0%	0%	0%

(continued)

Table 8.3 (continued)

	Year of implementation	2016	2017	2018	Mean
8.	Which devices did you use to view and complete the online lesson?				
	Desktop computer at the University	12%	12%	14%	12%
	Personal notebook at the University	24%	32%	17%	24%
	Desktop computer at home	32%	20%	28%	32%
	Personal notebook at home	49%	60%	59%	49%
	Tablet (e.g., iPad)	2%	4%	0%	2%
	Mobile phone	6%	16%	4%	6%
9.	Would you like to have more online lessons in the future?				
	No.	10%	16%	21%	16%
	Yes, 1 online lesson in this course would be good.	38%	36%	45%	40%
	Yes, 2 online lessons in this course would be good.	38%	28%	28%	31%
	Yes, 3 online lessons in this course would be good.	10%	4%	4%	6%
	Yes, 4 online lessons in this course would be good.	2%	0%	0%	1%
	Yes, 5 online lessons in this course would be good.	2%	12%	4%	6%
10.	If more online lessons were to be developed in addition to lecture 9, which of the following lectures do you think could be transformed into online lesson(s)?				
	1. Course introduction	22%	20%	4%	16%
	2. Paradigms of aesthetics	12%	16%	21%	16%
	3. Western aesthetics: imitation, formalism, expression	17%	20%	21%	19%
	4. Western aesthetics: social production, text	10%	20%	25%	17%
	5. Chinese aesthetics: Confucianism, Taoism	32%	28%	25%	28%
	6. Art criticism models: Feldman, Broudy	15%	16%	43%	23%
	7. Child aesthetic development	29%	28%	18%	25%
	8. Integration of art criticism and making	22%	28%	25%	24%
	10. Use of community resources to teach art criticism	37%	68%	50%	48%

^aParticipation in Coursera replaced the writing of a Journal in 2017 and 2018 as the follow-up activity to the second PowerPoint presentation. An average is therefore not given since it would not be meaningful to add up the results for activities that are different in nature

8.4.2.2 Reviewability

The online lesson was designed to replace one traditional face-to-face lecture. The students were given a period of 2 weeks to view the presentations and complete the three tasks. Only if they completed all the tasks and the Feedback questionnaire would they be marked as present for the lesson. The availability of the presentations over an extended period of time allowed the students to review them as many times and for as long as they liked. One student specifically stated that “we cannot assimilate all the new knowledge in a short period of time and will miss some of the important information in a traditional lecture. An online lesson lets us review the content again and again. It helps me remember more about what I’ve learned. Less

information will be missed.” The “review” function also allowed better retention of knowledge: the students stated that the online lesson was “convenient and memorable” and that it helped them “to memorize and recall the knowledge better.”

8.4.2.3 Autonomy and Independence in Learning

Learner autonomy was not only recognized in the space, time, and frequency of the learning but also in the pace of learning. Students could control how much time they spent on a particular learning task and how quickly they did it; for example, one student mentioned that “I can learn and work at my own pace.” The online lesson also encouraged them to search for information and encouraged them to engage in independent learning. Some students thought it was “easy to follow the content and explore additional content” that interested them. They could pause whenever they found particular parts interesting and surf the Internet for further information. One related benefit was the students’ improved digital competence, since they had more opportunities to work with online resources. The students experienced the process of exploration and thus had a sense of acting on their own. The “pause” function of the online lesson gave them the opportunity to think, to ponder, and to reflect. It was apparent that the online lesson fostered independent and self-motivated learning.

8.4.2.4 Novel and Interesting

Students who engaged in the online lesson were motivated, and they enjoyed doing it. Some students mentioned, for example, “I can learn by myself and can search for information immediately. It makes a lesson more fun,” “It makes learning more interesting, improves students’ engagement,” and “Have fun and easy learning.”

8.4.3 Students’ Preference for Presentations and Activities

In the questionnaire, students were asked to state their preferences and provide reasons for their preferences for the different components of the online lesson. The students’ comments on the presentations and tasks were also a good reference for me to use when planning the revised version in the next round iteration. Among all the follow-up activities of the online lesson, the one the students valued most was the opportunity to learn through public open learning courses and collaboratively construct resources which would be useful in their future teaching.

8.4.3.1 PowerPoint Presentation

The students found the PowerPoint presentations informative, clear, and convenient to read or watch. One student said they were comparable to face-to-face lectures: “The PowerPoint runs with sound tracks. It is the first time I’ve used it and it’s just like having a lesson in the classroom.” Another reason for the students’ preference for PowerPoint presentations was that they “can note things down easily while listening to the recording” and when they “missed some points, [they] can replay it and make a note.” However, quite a number of students mentioned that the files were very big and it took a long time to download them.

8.4.3.2 Quiz

Among the three activities or tasks, the quiz was the most preferred one in the first iteration; it was replaced in popularity by participation in Coursera in the second and third iterations. There were five questions in the quiz, focusing mainly on four different philosophies of art museum education. The students indicated that the quiz helped them to check whether they had really understood the course content. Other students stated that the quiz summed up the key points of what they had learned and that it served as a form of revision.

8.4.3.3 Participation in MOOC

Participation in the Coursera course entitled *Art & Inquiry: Museum Teaching Strategies For Your Classroom* was introduced in the second iteration. This course is about inquiry-based teaching methods developed for teachers and students in art galleries. There are four modules in the course, and the students were asked to focus on the second module, entitled “Close-Looking and Open-Ended Inquiry”. Various ways of helping learners to look at artworks and of engaging them in inquiry-based conversation around artworks are introduced. There are three videos to watch and the course ends with a quiz as an evaluation of learning. I specifically chose this module as a part of the online lesson because it is highly relevant to the content of the lesson.

The students preferred Coursera participation to other tasks because it was interesting, useful, and informative. They pointed out that many authentic examples and materials were provided by the professional and practical tutors on the MOMA course. Some students mentioned that they had not heard of or enrolled on open learning courses before and it was a completely new learning experience. One student noted that “it is like an interaction with a foreign art school” or like “taking a course in another country.”

8.4.3.4 Wiki

Wiki is a function of the Moodle that allows participants to collaborate in authorship. To complete the Wiki task, students were required to visit an art museum website and write an introduction and evaluation of the online teaching and learning resources available. They then collaborated in creating a document that included a contribution by each of them. By the end of the activity, all the students had a list of art museum online resources that they could use in their future teaching. The students liked Wiki because it gave them the opportunity to search for information by themselves. Through examining the websites of art museums and looking into their online teaching resources, they collected resources which “[would] be very useful when [they] are teaching students [themselves].” They also benefited from the list of museum resources they themselves had constructed because they could “learn from the contributions of others.”

8.4.4 Perceived Problems and Areas Where Improvements Could Be Made

In response to the difficulties and problems identified by the students in the evaluation questionnaire, a number of improvements had been made in the different iterations, including reducing the file size of uploaded materials, creating a discussion forum, improving the connections between presentations and tasks, and providing clear instructions on how to complete the follow-up tasks.

8.4.4.1 Difficulty in Downloading

The PowerPoint presentations in the first iteration were created using the PPT function of voice recording. This had made the PPT exceptional large in terms of file size. It took the students a long time to download them, and they could not download them using smartphones or tablets. Therefore, many students suggested exporting the PPT as a video which would create a file much smaller in size and be quicker to download. This was done in the second iteration.

8.4.4.2 Add Interactive Forum

Some students suggested that a forum could be set up to allow them to discuss and ask questions on the topic. According to my previous experience, if participation in a forum discussion is voluntary and not connected to getting marks or a prerequisite for engaging in other activities, very few students will give feedback in the forum. Indeed, the first principle of the successful implementation of online discussion

boards suggested by Comer and Lenaghan (2012) is that they should count toward course grades. Since there were already three tasks that students needed to complete, I decided not to add an extra task and make the workload too heavy. However, a discussion forum on museum experience was created in the second iteration, and participation was voluntary.

8.4.4.3 Incomplete Participation

Students needed to open and download the PowerPoint before they could go on to the next activity or task. This was made as a prerequisite. It was observed that some students did not watch the whole PPT but only opened it. One student reported that “the major problem is that some students can ignore the PowerPoint. They just click to download the PowerPoint and jump to the next task. I know some of my classmates have done that.” Therefore, some students suggested adding a command in the playing time so that students would have to play the whole PPT before they could start on the next task. There were problems with this idea, however. First, it was not technically possible to do it within the Moodle system. Second, even if it could have been done, it would still have been difficult to make sure that the students really watched the whole PPT. As an alternative way of solving the problem, therefore, I tried to make the PPT as informative and interesting as possible. Another remedial action I took was to make the tasks after each PPT as relevant as possible. For example, the answers to the quiz could be found at different intervals of the PPT, thereby encouraging the students to watch the whole of it.

8.4.4.4 Technical Problems

The students experienced some technical problems, especially in the first and second iterations. For example, some students noted that the Moodle system could not check whether they had completed a part, and therefore they could not proceed to the next. As Wiki is a collaborative document that only allows one person to work on it at any one time, some students mentioned that they needed to wait a long time for other students to finish using it. Another problem was that some students accidentally deleted all or some of the previous entries made by others. This had happened twice in the first and once in the second iteration. In the third iteration, I provided an example for the students, and I inserted a number before the example. The students followed and inserted the next number sequentially before their own entry. In this way, the students were aware of which number they were working on and the problem was resolved.

8.4.4.5 Lack of Interaction

Another major drawback of online lessons identified by the students was that they could not ask the teacher any questions and get an immediate response. The students could not have discussions and interactions among themselves. Although real-time discussion and feedback sessions could be arranged in an online lesson, this would counteract the advantage of being able to have the lesson at any time and at any place. Even if a Discussion or Forum is created, the student participation rate will be low if it is not a part of the assessment. Nevertheless, in the forthcoming implementation, I will create a Q&A Forum for the students if they have any questions to raise or share. The forum will not solve the problem of a lack of immediate response, but it will address some common questions raised by students.

8.4.4.6 Easily Distracted

On the one hand, an online lesson promotes autonomy and independence of learning. On the other hand, the success of an online lesson rests partly on students' self-discipline. One student rightly pointed out that "the major problem of having an online lesson is that students have to be responsible for themselves. They need to have good self-control and time management when going through the presentations and complete the tasks without getting distracted by other websites on the computer." A few other students concurred with this observation and said "students may easily be distracted by other websites." Students' commitment to self-regulated learning should be considered when planning online learning. This is consistent with the findings of a study conducted by Alter (2014, p. 58) on a group of BED visual arts students who responded that they had "to be very self disciplined when it came to completing work."

8.5 Reflection and Conclusion

8.5.1 Recommendation Regarding the Number of Online Lessons

On average across the three iterations, 71% of the students indicated that they would like to have one to two online lessons, while only 13% of students would consider having three or more online lessons. In the context of a 39-hour course in my university, therefore, I would recommend having 3–6 h of online lessons that would replace face-to-face contact hours. I would also make reference to the results of Feedback question 10 regarding which lecture would go best online if I decided to create another online lesson. We can introduce as many online learning activities in a traditional classroom lecture as we find appropriate. However, if the online lesson

is going to replace a complete lecture, we have to consider whether there is a government requirement regarding the percentage of face-to-face contact hours in a recognized degree programme.

8.5.2 Consideration of Context in Planning

After reflecting on the entire planning and implementation process, I would suggest that the teaching and learning context is the most important factor to consider for the success of the project. For instance:

- What is the nature of the content of the online lesson, and how will it impact on the design of the online learning activities?
- Will the online lesson be a replacement of or a supplement to face-to-face lectures? If yes, what will be the proportion?
- What measures should be taken to ensure student participation of the online lesson?
- How should students' performance in the online lesson be evaluated?
- How can we collect evidence of learning and evaluate student performance?
- How can we collect feedback from students?
- What possible technical difficulties will students have in completing the online learning activities and tasks?

Most of the above questions are pedagogical questions rooted in an online learning context. Developing an effective online lesson is the same as developing a face-to-face lesson in that it requires consideration of the prior knowledge, experience and ability of students, their interests and motivation, class size and student composition, the physical learning environment, the nature of the disciplinary knowledge to be obtained, the objective and goals of that particular lesson, etc. However, in addition to this very long list, a good understanding of the strengths, possibilities, and limitations of the medium of delivery – the unique characteristics of teaching and learning online – is required. It is not the online nature or properties of an online lesson that make it effective but rather the thoughtful pedagogical decisions that make the meaningful use of the online technology. As Alter (2014, p. 62) aptly points out, “[i]mprovements to education through the use of new technologies might be largely to do with teacher’s rethinking of their teaching, rather than the technologies themselves.”

8.5.3 Reconsidering the Use of Discussion Forums

Based on my previous experience of engaging students in discussion forums, I have been skeptical about the effectiveness and interactive nature of these forums that have been suggested by quite a number of researchers (e.g., Comer & Lenaghan,

2012; Garrison & Kanuka, 2004; Lai, 2002; Miiller et al., 2013). The major argument in these studies is that written comments, which are the usual form of communication in online learning, allow students to reflect, and therefore the comments will be more precise and thoughtful compared with face-to-face discussion. However, my experience was that not only the student participation rate but also the quality of their comments was low, particularly when their participation was not graded. In the first iteration of the study referred to here, no interactive forum was created. However, in response to the feedback collected from students, a discussion forum was added in the second and third iterations. Students were asked to share their recent experiences of visiting an art gallery or a museum. They were encouraged to upload photos and write two to three lines explaining what they had visited. The students' responses were good, especially after I shared photos of art museums that I had visited during the summer vacation. Some students talked about the most impressive artwork they had come across and some mentioned the rather alienating experience of visiting contemporary art exhibitions. Giving examples and apprising the students of the teacher's expectations are important, as this can kick-start the conversation among students.

8.5.4 Cost-Effectiveness in Terms of Time and Human Resources

Inevitably, more time is needed to develop an online lesson than to conduct a traditional face-to-face lesson. From trying to learn about new technologies that can be used on the course to overcoming various technical difficulties, and from designing e-learning activities to establishing new channels of communication that can accommodate the online learning context, the teacher needs to spend a great deal of time and effort on making the changes. This is one of the reasons why some faculty members are reluctant to do so. Incentives, professional development opportunities, and support from the university (Lim & Wang, 2016) are indispensable at this stage. The trial and error nature of design-based research makes it one of the best ways to create an online lesson that suits the specific context of a higher education institution. The testing, reflecting, and enhancing cycle of design-based research ensures that both the researcher (the teacher) and the participants (the students) will benefit. Investment in time and human resources in the development of an online lesson is worthwhile only if faculty members have the vision and are properly rewarded.

8.5.5 Support for Students

Most of the technical problems experienced by the students were partly owing to the limitations of the learning platform and partly because they were not used to using technology to learn. As noted by Lim and Wang (2016), we cannot assume that students are good users of technology in learning even though they use technology widely for entertainment and communication. “Students require technical support and educational guidance to use technological tools strategically for their learning” (Lim & Wang, 2016, p. 12). However, I would expect that technical problems will become less prominent as technology advances and with the increasingly popular use of blended learning at my university.

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