Factors In Design Of Assessment For Online Courses: Instructors' Reflections

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ABSTRACT

Assessment is acknowledged as a fundamental element in course design (Christen, 2003) and has great impact on teaching and learning (e.g., Anderson, Bauer & Speck, 2002). While much has been written on assessing students in traditional environments, there is a paucity of research on assessment of students in online environments (Reeves, 2000, 2002). This paper reports a study that investigated considerations and rationales that instructors had in design and use of assessment methods in online courses they taught. Twenty instructors teaching online courses at a large public university in the United States were interviewed on a one-on-one basis. Seven factors were identified from the instructors' reflections on their considerations and rationales behind the assessment methods they used, which included: (1) students, (2) motivation, (3) learning, (4) subject areas, (5) programs, (6) characteristics of the online delivery format, and (7) constraints. Each of the factors and their subcategories were reported. Implications of the findings and suggestions for further research were discussed.

Keywords: Online Assessment, Design Factors, Reflections, Consideration and Rationales

INTRODUCTION

Online education has made inroads into higher education in recent decades (Moore & Anderson, 2003). Allen and Seaman (2013) reported in their most recent survey results that "there were 572,000 more online students in fall 2011 than in fall 2010 for a new total of 6.7 million students taking at least one online course" (p.17). Online graduate courses and programs are especially attractive to adult learners since they can advance their education while staying with their families and maintaining their full-time jobs (Martinez, Liu, Watson, & Bichelmeyer, 2006). As the number of online courses and programs expands, concerns arise regarding their quality. One critical element for course and program quality assurance is the assessment used in individual courses for student learning (Anderson, 1998). What assessment methods instructors use usually indicates what they think is important for students to learn in the courses. Assessment also affects the depth of student learning, the learning strategies students take, and how they manage their study time (Brown, Bull, & Pendlebury, 1997). While much has been written on assessing students in traditional environments, there is a paucity of research studies on assessment of students in online environments (Reeves, 2000, 2002). This paper reports a study that examined considerations and rationales instructors had in design of assessment methods in the online courses they taught.

LITERATURE REVIEW

Assessment is well recognized to have great impact on teaching and learning (Anderson, Bauer & Speck, 2002; Bull & McKenna, 2004). Assessment is argued to be even more important in online environments (Rovai, 2000). According to Anderson (2004), most online students, who are busy adults with many family and work commitments, tend to be more practical and are less likely to participate in activities that are viewed as

supplemental to the course goals and assessment scheme. Morgan and O' Reilly (1999) point out that in face-to-face environments instructors have opportunities to go over the course materials with students, while in online environments, where students have more flexibility in deciding when and what course materials to read, "the instructor's efforts may be wasted unless assessment tasks are closely aligned and interwoven with study materials" (p.22).

Online environments are argued to bring advantages to instructors in assessing students. For instance, according to the Australian National Training Authority (ANTA) (2002), online environments can provide greater flexibility in where, when, and how assessment is taken. On the other hand, online environments pose challenges to instructors in assessment of online students. For example, in a fully online course, the instructor usually cannot see students physically, and he or she may never know for sure who is actually taking the course. This makes authentication and cheating issues more challenging to tackle in online courses (Christen, 2003; Rovai, 2000).

Much of the literature on online assessment (e.g., Oosterhof, Conrad, & Ely, 2007; Rovai, 2000) is anecdotal or opinion-based. Among the limited available empirical studies, many of them only examined the use of assessment in one course (e.g., Macdonald & Twining, 2002). While some studies investigated online assessment across courses, many of them focused on individual specific assessment tasks such as online discussions and participation.

Extremely few studies are available to explore why instructors choose certain assessment tasks in their courses. Empirical studies on assessment practices in online courses at the graduate education level are further scant. Considering the importance of assessment, the exponential growth of graduate programs and courses offered online, there is an urgent need to conduct studies on assessment in online environments at the graduate level. This study is an attempt to respond to this need.

METHODOLOGY

This study employed an exploratory, qualitative approach because of the following reasons. First, there is scant empirical research found on assessment methods used in online environments. If a topic needs to be explored but minimal research has been done on it, then it merits a qualitative approach (Creswell, 1998, 2003). Second, compared to quantitative methods, qualitative methods have the advantage in helping investigate a topic in depth (Patton, 1990). Finally, qualitative methods stress understanding a phenomenon from the participants' perspective (Kvale, 1996), and the focus of this study is to understand why online instructors choose certain assessment methods.

Participants

Purposefully sampling approach was employed in selection of participants. Participants were chosen from five different masters' programs offered by a large, public, research Midwestern university. These five masters' programs were: (1) Language Education, (2) Instructional Design and Technology (IDT), (3) Adult Education, (4) Nursing, and (5) Business Administration (MBA). The purpose of selecting participants from different programs was to explore assessment tasks used in a variety of disciplines. Choosing programs offered by one university was based on the consideration that the examined courses were offered in a similar context, and hence they could be reasonably compared and contrasted with each other.

Twenty instructors were purposely sampled from the five programs mainly based on the courses they taught and their willingness to participate in this study. All of them taught courses for the five programs. The courses they taught were core courses or major courses of the programs. Among them, nine of the participants were

male, and eleven were female. The detailed demographics of the participants and the status of the courses they taught are described in Table 1.

It is worth mentioning that similar to the methodology employed by Delandshere and Jones (1999), the focus of this study is not on the individual instructors, but on their reflections on the rationales and considerations underlying their practices. In other words, these instructors were not considered as separate cases; the information they provided constituted a collective case for understanding assessment tasks in online environments comprehensively.

(1) Data Collection and Analysis

The 20 instructors were interviewed on a one-on-one basis. Among the 20 interviews, depending on the interviewee's availability and preferences, 13 were conducted FTF, five via phone, one via MSN chat, and one via email.

Prior to each interview, the syllabus and other available materials of the course(s) that the instructor taught were examined. Their courses were also observed if the author had access. Analyzing the syllabi and course materials, as well as observing the courses in advance, helped the author make the best use of the interviewing time and focus the interviews on collecting data that could not be collected from other means. Each interview was conducted in a semi-structured format.

Interviews conducted via phone and FTF were recorded by a digital recorder. The digital files of the recorded interviews were listened to on the computer numerous times. The interviews were transcribed, summarized, and analyzed by the researcher. The data were examined over and over again to see if the categories, explanations, and interpretations made sense and reflected actual practices.

Table 1: Summary of information on participants and data collection

	Program	**Name**	**Gender**	**Status (as of time teaching the course(s)**	**Interview method**
1	Adult Ed.	Fred	M	Full time faculty, tenured, Ed.D.	FTF
2	Adult Ed.	Jessie	F	Full time staff and alumna of the program	FTF
3	Adult. Ed.	Randy	M	Adjunct faculty, Full-time staff of a related program, Ed. D.	FTF
4	Adult Ed.	Hunter	M	Full time faculty, tenured, Ed.D.	Phone
5	Lang. Ed.	Jack	M	Doctoral student	FTF
6	Lang. Ed.	David	M	Doctoral candidate	FTF
7	Lang. Ed.	Shea	F	Just defended her dissertation	Synchronous text-based chat (MSN messenger)

8	Lang Ed	Xiang	F	Doctoral student	FTF
9	Lang Ed.	Lili	F	Just defended her dissertation	Email
10	IDT	Cathy	F	Adjunct faculty and alumna of the doctoral program, full-time staff of another program, Ph.D.	FTF
11	IDT	Brenda	F	Full-time faculty, tenured	FTF
12	IDT	Felix	M	Full-time faculty, tenured, Ph.D.	FTF
13	Nursing	Joan	F	Retired professor, former full-time faculty of the program, Ph.D.	Phone
14	Nursing	Sandy	F	Full-time faculty, tenured, Ph.D.	Phone
15	Nursing	Sharon	F	Full-time faculty, tenured, Ph.D.	Phone
16	Nursing	Rosy	F	Full-time faculty, tenured, Ph.D.	Phone
17	MBA	Leo	M	Full-time faculty, tenured, Ph.D.	FTF
18	MBA	Joyce	F	Full-time faculty, tenured, J.D.	FTF
19	MBA	Tyler	M	Full-time faculty, tenured, Ph.D.	FTF
20	MBA	Justin	M	Full-time faculty, Ph.D.	FTF

Validity

Descriptive validity and interpretive validity were emphasized in this study. Member checking was carried out throughout the study to ensure the validity. Additionally, peer debriefing was conducted in the data analysis and interpretation stages of this study. Finally, following suggestions given by Johnson (1997), low inference descriptions were used in reporting the study findings to help readers get close to the participants' actual language and personal meanings.

(2) RESULTS

Instructors' rationales and considerations underlying the assessment tasks they used were investigated. Seven large factors were identified, including: (1) students, (2) motivation, (3) learning, (4) subject areas, (5) programs, (6) characteristics of the online delivery format, and (7) constraints. These factors and their associated sub factors are detailed below.

1. Students

All of the instructors considered students when designing and using assessment tasks. The elements that they considered associated with students can be categorized in three groups: (1) students' general characteristics, (2) special characteristics of online students, and (3) students' feedback.

(1) Students' general characteristics.

Instructors mentioned that they considered students' entry levels, backgrounds, preferences, learning styles, as well as student progress and paces. These characteristics are named as general characteristics because they apply to students in other learning environments as well.

a. Entry level and background. Many instructors considered students' entry level and background when they designed the assessment tasks. For instance, Dr. Sharon lowered the difficulty level of one assessment task because she thought the original requirements were too advanced for some students. Similarly, Professor Brenda mentioned that she increased the difficulty level of some assessment tasks, because in the past there were some students who came to the course without ever using computer keyboard before, but this was not the case any longer with the prevalence of technology.

b. Preferences and learning styles. Many instructors provided students with options in their assessment. For instance, Dr. Sandy allowed students to choose different projects and different topics, to work in teams or alone, as well as to choose teammates whom they wanted to work with. According to her, different students might have different preferences, and providing options helped meet their different needs. Learning styles were not very often mentioned by instructors interviewed. Dr. Hunter and Ms. Jessie both included concept maps in their assessment tasks. According to them, the concept map assessment tasks made visual learners happy, although these tasks might be challenging for verbal learners. As Ms. Jessie further explained, she used a variety of ways to assess students and tried to cover as many bases as possible, so that every student could find some aspects from the course with which they felt comfortable. At the same time, everyone could also feel being pushed to do something out of their comfort zones.

c. Student progress and pace. Many instructors mentioned that students progressed at different paces when they reflected on the assessment tasks they used in their courses, and stated that they made their choices accordingly. For instance, as Dr. Joan from the Nursing program said, "I feel that people learn at different levels, learn at different rates." She further explained that this was also why she attempted to be as flexible as possible to students in terms of turning in assignments, and provided students with opportunities to redo their work.

d. Career. When designing assessment tasks, several instructors also considered the knowledge and skills students would need in their careers. For instance, Professor Brenda from the IDT program asked students to critique their peers' work (counting for 10% of their final grades) and to keep logs about the critique they received from their peers, as well as what changes they made to their projects based on the critique (10% of their final grades). According to her, how a student responded to feedback was a huge part for instructional design and production. The critique component was not just for learning design, but also to "add professional aspect," which students need to experience. Similarly, Dr. Sharon from the Nursing program stressed reflective thinking skills in her course, because she believed that these skills were very important for the nursing profession, especially nurse practitioners.

(2) Special characteristics of online students

Four characteristics of online students were indentified: self-motivated, experienced, working, and busy, which are reported below.

a. Self-motivated. Many instructors, especially from the MBA and Adult Education programs, mentioned that online graduate students were self-motivated. As Dr. Randy from the Adult Education program commented, "These people are probably in their thirties, forties or even older…. Most of them come to the program after they do something else….These students are very committed...They are not looking to get by easy. They do not ask "what is the minimal work I have to do [to pass this course]?"According to him, this was also why he did not

worry that students may set their objectives too low in the learning contract, one of the assessment tasks he used in his course. Instead, often they set their objectives too high. He would need to "remind them that this is only a semester long course."

b. Experienced. Many instructors mentioned that in general online students tended to be more experienced than onsite students. Instructors considered this characteristic of experience in the design of their assessment tasks. For instance, Dr. Justin taught both residential and online MBA courses. In his online course, he asked students to share and discuss more about their experiences because students were more experienced, whereas he focused more on theory in his residential course. In his words, his online course "is more experiential."

c. Working. Many instructors, especially from the MBA and IDT programs, considered that online students were working in their design and use of assessment task. Several instructors regarded this as an advantage and stated that this helped students apply what they learned courses more directly in practice. As Dr. Felix from the IDT program explained, "They [online students] are better students, not in the sense that they are smarter. They are on the job. They can apply what they learn directly in their work….They do not ask why I need to learn this." Similarly, the last project Dr. Tyler asked students to do in his course was to conduct a partial audit of marketing performance in the company where the students worked. As he stated, he would not be able to use the same assessment task in a residential course because typical residential students studied full-time and they did not have a company to apply directly what they learned from the course.

d. Busy. Many instructors mentioned that online graduate students are busy because they work full time and many of them have their own families. Several instructors explained that this was partly why they broke down big assignments into smaller ones and used ongoing and continuous assessment tasks throughout the courses. Additionally, Dr. Joan from the Nursing program mentioned that this was also why she did not and could not make students participate too much in online discussions in her course.

(3) Students' feedback

Many instructors mentioned that they modified their assessment tasks based on students' feedback. For instance, according to Dr. Leo, one assessment task he used originally was to ask students to write two analysis reports. He replaced this task with four current event forum discussions mainly because students continuously told him that they liked the latter better. Students' feedback also was the basis for some instructors to continue to use certain tasks. For example, according to Dr. Randy, students were asked to participate in synchronous chats in his course. Although he personally felt that synchronous chats were awkward and not effective for student learning, he kept them because students said in the course evaluation that they liked them.

Although nearly all the instructors indicated that they valued students' feedback and took it into serious consideration. However, students' feedback did not always result in changes to the assessment tasks that they used. For instance, some instructors mentioned that they continued to use the same assessment tasks even though they were aware that students did not like the tasks. Two reasons were identified for why they did not make the changes. First, some instructors believed that the use of certain assessment tasks were necessary no matter whether students liked them or not. Another reason was related to practical factors. For instance, according to Dr. Rosy, some of her students reported in the course evaluation that they would like the course to be more focused. She could not make the change, although she wished, because she had 50 students who were from different majors.

2. Motivation

Many instructors mentioned motivation when they addressed the rationales and considerations they had for the assessment methods they used. Subcategories associated with motivation are described below.

(1) Relevance. Making their assessment tasks as relevant as possible to students was attempted by many instructors. For instance, according to Dr. Felix, allowing students to choose projects that they could directly use in their work made students more motivated. Similarly, Ms. Shea from the Language Education program commented, "I want actually for all assignments for the students to do something that will be useful in their teaching/practice/study.... Relevance is very important and motivating."

(2) Interest. Some instructors mentioned that they designed the assessments in a way to interest students. For instance, according to Dr. Fred, when he designed discussion forums in his course, he thought hard concerning how to make the discussions more meaningful and interesting to students. Similarly, Dr. Sandy mentioned that the assessment task used prior to the PowerPoint Presentation task was a large individual paper. One of her intentions for making the change was to make the task more interesting.

(3) Confidence. For instance, Dr. Leo replaced the assessment task of asking students to write an analysis paper with a new assessment task named "current event forums." The new task asked students to discuss recent articles and events chosen by the instructor. He made this decision because this task could help build up students' confidence by helping them to realize that they were able to analyze current events taking place as well as articles written by current economists.

(4) Empowerment and encouragement. Several instructors mentioned that they gave some weight to student asynchronous discussions in their final grades with a purpose to convey the importance of discussion to students and encourage them to participate. For instance, according to Mr. David and Ms. Shea who included interactive reflections in their assessment tasks, one purpose of using this assessment task was to give students encouragement, in addition to feedback, throughout the course.

(5) Networking. Some instructors mentioned that asking students to work in teams helped students to know each other and build networks. This was important for retaining their learning and sense of belonging, as well as for enhancing their professional careers. As Dr. Tyler explained, "The most import reason [for having teams in this course] is networking. I think it is important for them (i.e., students) to become aware of the skills and interests of other people in the class. I think that is important for their networking, for career, I think, it is important for retaining their sense of belonging, eventually towards alumni thing, and so on."

3. Learning

Learning is a major factor in the design of assessment tasks that all the instructors addressed. The following subcategories were identified from the data analysis.

(1) Helping students master certain knowledge and skills. All the instructors mentioned that one purpose of the assessment tasks they used was to help students to master certain knowledge and skills. Many of them mentioned higher order thinking skills. Self-directed and life-long learning skills were stressed by some instructors, especially from the Adult Education program. According to Dr. Hunter and Dr. Randy, one purpose of using a learning contract was to help students to build and improve self-directed and life-long learning skills. Some instructors, especially those who used closed book quizzes and exams, mentioned the necessity of memorizations and comprehension of some knowledge in the courses that they taught.

(2) Helping students master various levels and aspects of knowledge and skills. Some instructors mentioned that they used their assessment tasks to help students master different levels of knowledge and skills. For example, Professor Joyce referred to Bloom's taxonomy when designing the quizzes she used in her course.

According to Dr. Leo, among the four assessment tasks he used, two of them (quizzes and exams) were intended to test student understanding of the concepts covered in the quizzes and exams, whereas the other two tasks (team discussion forums and current event forums) were intended to help students to apply the concepts.

(3) Providing students with a variety of learning experiences. Several instructors mentioned that they used a variety of assessment tasks with a purpose of providing students with a variety of learning experiences. For instance, Dr. Sandy used different types of assessment tasks, such as field reports, critiques, taking inventories, PowerPoint Presentations, and online discussions. Similarly, Dr. Randy used at least five different types of tasks, including book critiques, interviewing practitioners, online discussions, designing activities for peers, and evaluating programs.

(4) Building learning community and increasing interaction. Many instructors mentioned that one intention that they had in the design of the assessment tasks was to help build a learning community and increase interactions between students. Several of them stated that this was also partly why they included student participation in asynchronous discussions in their assessment tasks. For instance, according to Dr. Sharon, there was a lot of participation in her course, which accounted for 30% of students' final grades. She asked students to not only post their work online but also provide feedback to their peers. She believed it was "an important part for online learning, to create a learning community online." She further explained the importance of learning community from her perspective, "it is important to learn from different perspectives….They can learn to approach things in different ways."

(5) Helping students to achieve better learning outcomes. Helping students to achieve better learning outcomes was mentioned by several instructions in reflection of the assessment tasks they used. For instance, according to Mr. Jack, one purpose he had in asking students to use a metaphor to describe language instruction was to help students to think deeper instead of just throwing in some points. Similarly, Dr. Cathy mentioned that she asked students to review and edit their peers' work because she believed this could help students to produce better learning outcomes (products). Additionally, quite a few instructors mentioned that they asked students to work in teams also because they believed this could help students learn better. For instance, as Dr. Rosy stated, "Students learn better when working with others, rather than just learn from books."

(6) Help instructors and students to see students' learning process. Some instructors mentioned that they used assessment tasks with a purpose to help them and students to see the learning process. For instance, according to Ms. Lili, in addition to helping students to achieve better learning outcomes, using portfolios could help her to understand "the process of learners." As she explained, from the portfolios students compiled, she was "able to see how they changed in their thinking and help them become competent educators." Similarly, Ms. Shea mentioned that she emphasized asynchronous discussions in her assessment tasks because it could help observe students' learning progress.

4. Subject areas

Several instructors mentioned the characteristics of subject areas they taught when they reflected on their rationales and consideration underlying the assessment tasks they used. For instance, according to Dr. Leo who taught an economics-related course for the MBA program, "In economics, the content is very specific, and it is very large… So in this course, we want them to learn some basic ideas in macroeconomics. But in addition to that, many of our assignments get them actually to apply it. They go beyond the basic ideas. They have to learn what is going on in specific countries. They have to find sort of numbers of analysis, very current, what is going on with the world right now." Similarly, Dr. Rosy mentioned that she used quizzes and exams, which mainly consisted of multiple-choice questions and short answer-questions concerning definitions, partly because in pharmacology, the subject area the course was about, there were best answers, right and wrong

answers, and right answers without good rationales. In contrast, Dr. Tyler commented that he did not include quizzes and exams in his marketing course because unlike accounting marketing basically was not "rule-based."

5. Programs

In the design of assessment tasks, instructors not only considered factors at the course level, several of them mentioned factors concerning the program level as well. Factors related to program levels are detailed below.

(1) Course status in the program. Quite a few instructors mentioned the status of the course(s) they taught in the program. For instance, according to Professor Brenda, because the course she taught was a core course of the IDT program, the objectives of the course were reviewed and agreed on by all the full-time faculty members of the program. One major objective of the course was to ensure each student mastered the minimal levels of instructional design skills. This was partly why she asked students to complete their projects individually instead of working in teams. The status of the course(s) in the program also had an influence on the amount of assessment tasks that instructors gave to the students. For example, Dr. Leo used four assessment tasks in the course he taught for the online MBA program, but only used two tasks in the corresponding course for the residential MBA program. The reason was because the course he taught had a different status in the two programs. The course for online program is only about macroeconomics, but for residential program it includes both managerial and macro economics.

(2) Alignment with the program design. According to the instructors interviewed from the Nursing programs, the program was going to reorganize some of its core courses. In alignment with the changes to the program, they were planning to modify the assessment tasks they used in their courses as well. For example, Dr. Sharon mentioned that the resume assignment she used in the course would be moved to the gateway stage at the program level (i.e., before students enrolled in the program). Likewise, the portfolio assignment she used, in which she asked students to state their goals and collect supporting artifacts, would be moved to the program level as well.

(3) Consistent with the mission or philosophy of the program. The mission or philosophy of the program was another factor that instructors considered in their design or selection of assessment tasks. For example, according to Dr. Hunter and Dr. Randy who asked students to do learning contracts and to design activities for their peers, using these assessment tasks was consistent with the mission and philosophy of the Adult Education program, which was to help students become self-directed and life-long learners.

(4) Consistent with the current common assessment practice in the program. Some instructors implied that they used some assessment tasks partly because their colleagues used them. For example, Dr. Rosy mentioned that the case analysis task she used was common in nursing schools. Similarly, Dr.Tyler mentioned that while he allowed his residential students to choose their teammates, he did not give his online students such option, partly because assigning teammates became "not acceptable" in residential courses but was still accepted in online courses at the business school where he taught.

6. Characteristics of online delivery format

Many instructors mentioned they considered the characteristics of online course delivery in the design of the assessment tasks they used. Three fundamental characteristics of delivering courses online are identified and described as below.

(1) Instructors and students are physically separated. Some instructors mentioned that because they could not see students physically in online courses, their assessment tasks needed to reflect this accordingly. For instance, according to Ms. Lili, this was also partly why she required students to participate in online discussions. Additionally, because instructors and students were not in the same place, it was challenging for instructors to administer proctored quizzes and exams in online courses. Most of the instructors who included

quizzes and exams in their assessment tasks mentioned that they had no way of knowing what students brought with them when taking the quizzes and exams. Some of them showed great concerns regarding the possibility that students might collaborate with each other on the quizzes and exams that were supposed to be completed individually. Some strategies they used in this regard included only allowing each student to take each quiz and exam once, asking them to complete many test items in a limited time (e.g., 2-3 hours), making the quizzes and exams available for a limited time period (e.g., 3-5 days), and not providing correct answers until all the students submitted their answers.

(2) Students are physically separated from each other. Instructors from all the five programs mentioned that they had students who took courses from other states and from other countries. Dr. Felix and Ms. Xiang stated that this was partly why they did not ask students to work in teams. According to Ms. Lili who also did not ask students to work in teams, if the course was offered FTF she probably "will have students team up to work on projects, since they will be meeting each other FTF and develop more close relationships with each other. There is less issue with time zone differences as well." It is worth mentioning that, as previously discussed, several other instructors asked students to work in teams. The advantages for students to work in teams, according to the instructors, included helping students to learn from each other, encouraging each other, achieving better learning outcomes, and developing professional networks.

Additionally, according to Dr. Cathy, because online students were not taking the course together physically, she had to modify the format of some assessment tasks that were used in FTF courses. For example, one assessment task she used was to ask students to rearrange a document (created verbatim from a real set of instructions) and make it more "user-friendly". Students were not allowed to add words, but rearrange. She mentioned that in the residential format of the course, students were asked to complete this task with scissors and glue in groups. In the online version, since students could not physically sit together to complete it, she asked students to use Microsoft PowerPoint (or Word if they preferred).

(3) Students take courses asynchronously. Different from typical residential courses where students attend the same courses they are enrolled in at the same time, online students and instructors can log on in the course virtual space at any time asynchronously whenever convenient to them. Many participants mentioned this was advantageous for online instructors and students. Some of advantages they described included: Instructors and students had the flexibility of working on the course at any time. Every student had the equal opportunity to participate in the asynchronous discussions, instead of only a few students who spoke first as in a residential course. Instructors and students had more time to think about their responses, which helped make the discussions more thoughtful.

On the other hand, some instructors mentioned this could be disadvantageous. For instance, according to Dr. Randy, this could drag out the communications between the instructor and the students as well as among students. As he explained, "In an online setting, if I post a comment that you do not understand, you have to type a question back to me. It might be twenty-four hours later or longer before I respond to you. Then I might not understand your question. It takes the learning process and drags it out." To compensate the disadvantageous side of asynchronous discussions, some instructors included synchronous discussions in their courses and counted it for students' final grade. Additionally, some instructors adjusted the pace and depth of the assessment tasks. For example, Dr. Tyler mentioned that while he used three cases in the online course, he probably would use six or seven cases if the course was taught FTF. As he summarized, "here [in online courses] we have less breadth and repetition, but more in depth."

7. Constraints

Some instructors mentioned constraints they had in reflecting on the assessment tasks they used. The major constraints they mentioned included class size, deadline to turn in the final grades, course length, and the amount of course credit hours.

(1) *Class size.* Constraints associated with class size were mentioned by many instructors, especially those from the Nursing and MBA programs. For instance, Dr. Rosy from the Nursing program stated that she did not give much weight to online discussions in students' final grades partly because it was difficult to grade the discussions among 50 students. Additionally, some instructors mentioned in addition to the other advantages of teamwork, they asked students to work in teams with the consideration of the class size. For instance, according to Dr. Tyler, "using teams can give us fewer papers to grade." As he explained, "We have teams, currently 32 teams. We have 32 team reports, not 150 individual reports."

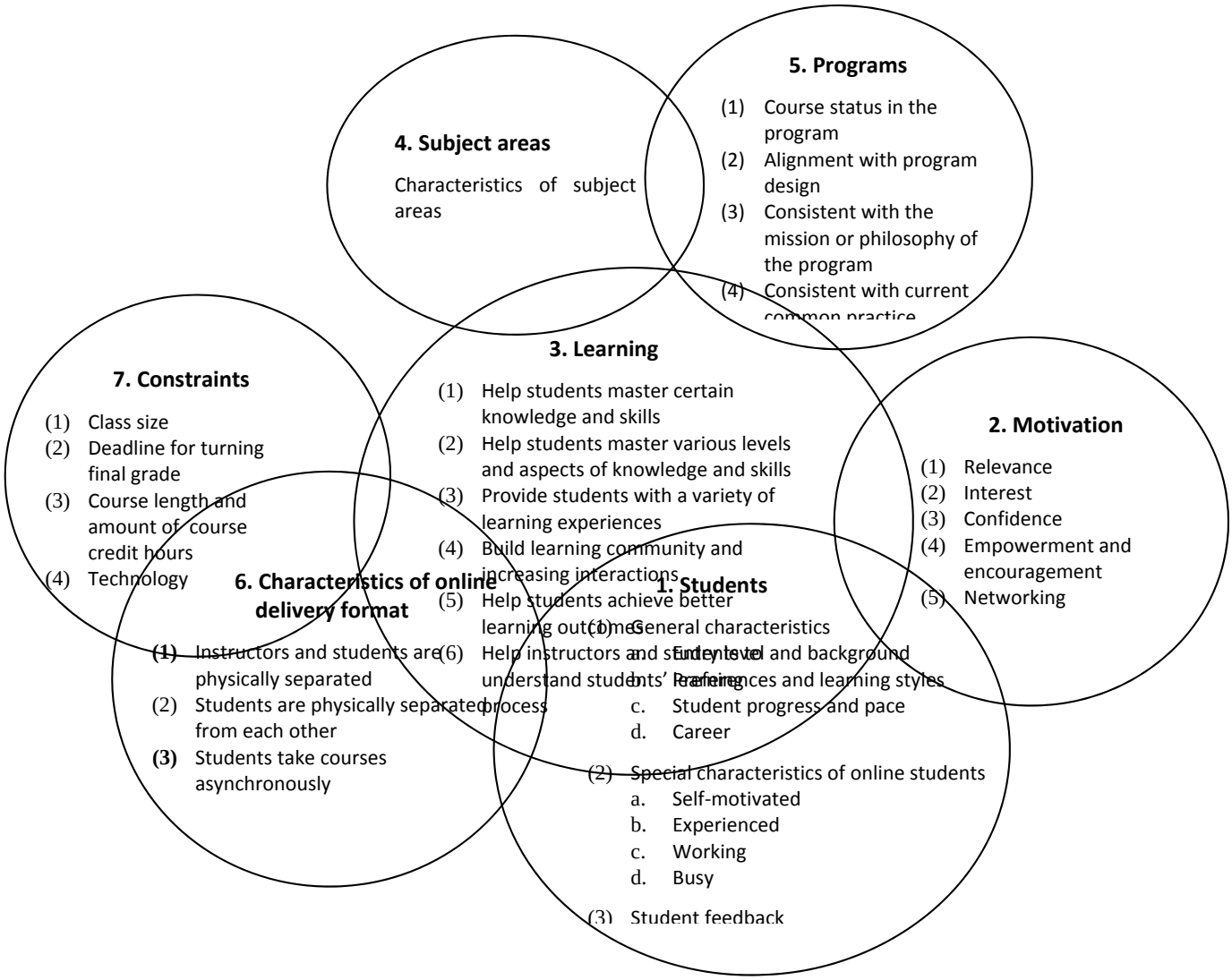
(2) Deadline for turning in the final grades. At the university studied, instructors were required to submit students' final grades three days following the last class meeting or final exam. Some instructors mentioned that meeting this deadline was another constraint that they had to consider in the design of the assessment tasks, especially the last one. For instance, Dr. Rosy mentioned that she used an exam instead of the original task asking students to write a structured essay at the end of the course because the exam was easy to grade in the limited time period. Similarly, Dr. Sandy stated that she asked students to do a PowerPoint presentation instead of a written paper for their final project also because it was easier to grade and meet the deadline for turning in the final grades.

(3) Course length and amount of course credit hours. The length of the course and the amount of credit hours awarded to students were also considered by the instructors in the design of their assessment tasks. For instance, Dr. Felix mentioned that he used fewer deliverables in his online course, because his online course was offered in the summer session which was shorter than the spring and fall semesters when the residential course was offered. Similarly, as discussed earlier, Dr. Joyce mentioned that she eliminated some assessment tasks because she found it was too much for students to do.

(4) Technology. Another factor that instructors mentioned involved technology. For instance, Dr. Sandy mentioned that she deleted quizzes from her assessment tasks because she and her co-teaching colleague had technical difficulty in uploading the quizzes and keeping them secure.

The identified seven factors and their subcategories are illustrated in Figure 1. As indicated in Figure 1, these seven factors are related to and intertwined with each other. The instructors usually did not consider individual factors in an isolated manner, but considered the factors comprehensively in making their decisions concerning assessment tasks. For example, as mentioned earlier, one assessment task that Dr. Sandy used was to ask students to do a PowerPoint Presentation for their final project. Several factors were found from the rationales that Dr. Sandy mentioned in making that decision. These factors included "motivation" (i.e., this could help make students be more interested in the task), "characteristics of the online delivery format" (i.e., compensating for the disadvantage of online environments where students are physically separated, and adding variety to the assessment tasks); and "constraints" (i.e., easier to grade and meet the deadlines of submitting students' final grades).

Figure 1 **Summary and visualization of the seven design factors**



DISCUSSION AND IMPLICATIONS

Seven major factors were identified from instructors' reflections on their design considerations underlying the assessment tasks. Among the seven factors, learning emerged as the key factor that was most frequently mentioned by the participants. As Joughin (2004) concisely summarized, "[t]he relationship between assessment and learning is complex, has been expressed in many ways, has been researched from a range of perspectives, and has generated an extensive literature" (p.1). While the relationship between assessment and learning is not the focus of this study, the findings of the study partly demonstrated the complexity of the relationship and implied that learning has become an axiom in the design of assessment.

Abundant literature (e.g., Garrison & Anderson, 2003; Moore & Anderson, 2003) suggests that one should take into consideration the special characteristics of the online delivery format in the design and teaching of online courses. All the instructors in the study seemed to be aware of this, although the degree of their preferences towards the online delivery format varied from each other. Some seemed to notice more the advantages and opportunities of teaching courses online, while others emphasized more the challenges and disadvantages.

Some factors identified in this study are found to exist in other contexts as well. For instance, class size was identified as one of the constraints for instructors in the selection and design of assessment tasks in online courses at the graduate level. Yates (2005) found that class size was also one constraint for online instructors teaching at the community college level. Additionally, this constraint was found to affect instructors teaching residential courses as well. For instance, Scott, Chovanec, and Young (1994) found that some professors teaching in traditional environments used multiple-choice exams because they did not have time to grade assessment tasks in other formats such as papers, even though they recognized the latter assessment tasks were more useful in fostering students' higher order thinking skills.

As not much literature has been found about the factors affecting the design of assessment methods, these findings are able to provide some general guidance for instructors and designers in practice and shed light on conducting similar studies in other contexts. However, this does not mean that there is not much difference across contexts in the design of assessment tasks. Rather, context is always important in the design and delivery of courses, including assessment tasks. For instance, it is likely that the factor "students" needs to be considered in design and teaching no matter what the learning environments and context are, although certainly specific characteristics of students in different contexts differ from each other.

Additionally, some factors affecting instructors in other contexts may not exist in the context of online graduate education. For instance, researchers studying assessment practices in K-12 contexts (e.g., Black & William, 1995) find that external mandate tests have a great effect on teachers in the selection and design of assessment tasks. Delandshere and Jones (1999) interviewed three elementary teachers from two schools. They identified a similar tension between mandate accountable testing and the call for change in pedagogy and curriculum. Such tension and dilemma seem not to exist in graduate education. As far as this study is concerned, most of the interviewed instructors indicated that they had much freedom in the design of the assessment tasks they used in their courses, and the grading of the work students submitted.

While these factors might not apply exactly to one's specific cases, they should still be able to help one, at least to get him or her started thinking of some issues in this regard. Appendix 1 summarizes the factors and the related subcategories identified in the study, lists issues that one may consider along with the factors, and provides some corresponding suggestions and tips. Finally, it is worth pointing out again that the identified factors are not isolated from each other, but instead are intertwined with each other. Instructors need to consider the factors in a heuristic and comprehensive manner.

LIMITATION AND FURTHER RESEARCH

As Fraenkel and Wallen (2003) point out, "generalizing is possible in qualitative research, but is of a different type than that found in quantitative studies. Most likely it will be done by interested practitioners" (p. 445). The generalization of this study is similar to other qualitative studies of this kind. Audience would need to be aware of these limitations when applying the findings of this study in their own cases.

Regarding further research, since limited research has been conducted on assessment in online environments, there are many topics that can be explored. For example, this study asked the instructors to reflect on the rationales they had underlying the assessment they used. These reflections were conducted after the assessment methods had been selected or designed. It would be interesting to interview instructors at the beginning and/or in the design process, and then comparing the results with the findings of this study. In addition, one could do a similar study by interviewing instructors teaching online courses at other graduate programs and/or in other disciplines, and then comparing the findings with this study.

Appendix 1: Factors, issues, and suggestions concerning the design and selection of assessment tasks

Factors		Sample issues to consider	Some suggestions and tips
Learning	Certain knowledge and skills	• What knowledge and skills do I want students to master and/or demonstrate from this assessment task? • Do the format and design of the assessment task help students to master and/or demonstrate the knowledge and skills that I intended?	• Use assessment tasks that are likely to align with your purpose. For example, if your purpose is to help students to develop and/or demonstrate critical thinking skills, consider asking them to do critiques and avoid using quizzes and exams. • Selection of the appropriate type of assessment task is not equal to effective use of it. More attention needs to be given to how to design it.
	Levels and aspects of knowledge and skills	• What level is the knowledge and skills that I want students to master and demonstrate? (e.g., understanding concepts only? or as well as apply them?) • What aspects of knowledge do I want students to master and demonstrate?	• Refer to Bloom's taxonomy, the revised Bloom's taxonomy by Anderson and Krathwohl (2001), or other resources addressing levels of knowledge and skills. • If students need to master different aspects of knowledge in the area, ensure your assessment tasks cover them as comprehensively as possible.
	Learning experience	• What learning experience do I want students to have from doing these assessment tasks?	• If you would like students to have a variety of learning experiences, consider using a variety of assessment tasks, such as interviews with practitioners, online discussions, and group presentations.

	Learning community and interactions among students	• How important is the learning community and interactions to the course?	• Keep in mind that learning community and interactions are a means to an end of learning, not the end itself. • Use strategies such as asking students to respond to each other in asynchronous discussion forums, or asking students to complete some activities and assessment tasks in teams. • To encourage deeper and more meaningful interactions, consider providing specific guidelines and exemplars.
	Learning outcomes	• How can I design the assessment tasks in a way to help students to achieve better learning outcomes?	• The answer for this question will vary from task to task and course to course. For instance, for an essay task, provide some guidelines and list the issues you would like students to write on instead of just giving them a general topic.
	Learning process	• How can I observe students' learning process? • How important is the learning process compared to learning outcomes?	• Assessment tasks such as asynchronous discussions and reflection papers are helpful for instructors to learn students' learning process. Of course, again, it will mainly rely on how you design the tasks. • Education literature suggests that the learning process is as important as, if not more important than, learning outcomes.
Subject areas	Characteristics of disciplines	• What characteristics of the subject areas do I need to consider in the design of the assessment tasks?	• Design and use assessment tasks that are consistent with the needs and characteristics of the disciplines. For instance, if psychomotor skills are important in the discipline that the course addresses, performance-based tasks seem to be more appropriate than taking exams with multiple choice questions and writing research

			papers.
Students	General characteristics (e.g., entry levels and background, preferences and learning styles.)	• Are students' entry levels and background being considered in the assessment tasks? • Does the assessment task accommodate students' preferences and styles?	• Consider using mastery quizzes (allowing students to take them multiple times) if the knowledge and skills are expected to be mastered by each student from the course. • Provide students with options in selecting assessment tasks.
	Special characteristics of online students (e.g., self-motivated, experienced, working, busy.),	How can the assessment tasks be designed in a way to suit online students' special characteristics?	• Use assessment tasks that help students to apply directly what they learn in their work (e.g., allowing students to choose issues relevant to their job). • Allow students to negotiate the goals they want to achieve from the assessment tasks.
	Student feedback	• How can I collect more feedback from more students? • What suggestions from students should I take? Can I provide compelling rationales if I cannot make the changes students suggest?	• In addition to course evaluation, consider other means to collect students' feedback, such as asking students to provide suggestions openly in the online discussion forum near the end of the course, and/or some weeks after the course ends. • Make as many changes as possible based on students' suggestions, especially those raised by the majority of the class. • Consider other factors such as the constraints you have as well when considering students' feedback.
Motivation	Relevance, interest, confidence, encouragement	How can I motivate students to learn through the assessment tasks?	• Think of ways to make the assessment tasks relevant to students, more interesting, etc.

Online environments	Instructors and students are physically separated	• How could I design assessment tasks such as quizzes and exams in a way to suit the online format? • Should the quizzes and exams be closed book? How much time should I give students in taking the quizzes and exams? • How can I know whether students understand the course content since I cannot see their facial expressions at a distance?	• Consider using assessment tasks that do not require the instructors' presence. • If you decide to use quizzes and exams, assume that some students will refer to books even if you tell them the exams are closed book. Design the quizzes and exams in a way to make it difficult for students to copy answers from books and relevant resources. • Use some small assessment tasks to ask students to show if and how much they understand the content, such as listing some questions for students to discuss in the discussions forums.
	Students are physically separated from each other	• Should I ask students to work in teams? • Is the format of the assessment task suitable for students to work together at distance?	• Use of teamwork depends on the purposes of the courses, and what you would like students to learn from the tasks. For instance, if the purpose is to ensure students to master specific technology skills, then teamwork might not be necessary since students usually divide their work when working in teams. • The assessment tasks should not require students to meet physically.

	Students take courses asynchronously	• Should I set deadlines for students to complete certain tasks? • How much time should I give students before moving on to another discussion topic?	• Having a deadline helps students to complete the work. However, be sure to remain flexible if some students may need more time for a variety of reasons. • There is no formula to calculate how much time should be given to students to complete a task. As far as asynchronous discussions are concerned, general guidelines are to give students more time than their counterparts in residential environments, (e.g., if one week is given to residential students, then offer two weeks for online students). • Some instructors find that residential students study at a faster pace, while online students study at a slower pace but with more depth.
Programs	Course status in the program; program design; common practice; mission or philosophy of the program	• How is the course that I teach related to other courses in the program? Is it required or elective? • How necessary is to maintain consistency with assessment practices of colleagues teaching in the program? • What is the mission of the program? • Do the assessment tasks that I use reflect the mission of the program?	• Design your assessment tasks in alignment with the program design and the mission of the program. • Before designing the assessment tasks, clarify the status of the course in the program and the teaching and learning goals of the course from the program.
Constraints	Class size; deadlines for turning in final grade; course length, the amount	How can I handle these constraints while maintaining the quality of the course?	• Some instructors use teamwork to address the constraint of a large class size. But this should not be the only rationale you use for asking students to work in teams.

	of course credit; technology		• For assessment tasks that require more time to grade, ask students to complete them well in advance of the final week, making clear that they need not until close to the deadline to turn in tasks if they complete them early. • Give an appropriate amount of assessment tasks. Too many tasks can be just as counterproductive as too few tasks.

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