

Asynchronous Discussions and Assessment in Online Learning

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Abstract

This case study explored asynchronous online discussions, assessment processes, and the meaning students derived from their experiences in five online graduate courses at the Colleges of Education of two Midwestern higher education institutions. The findings suggest that asynchronous online discussions facilitate a multidimensional process of assessment demonstrated in the aspects of structure, self-regulatory activities, learner autonomy, learning community and student writing skills. The students valued the discussions as an essential component of their online learning. Further research is needed to understand the characteristics of online assessment, and what assessment strategies or criteria enhance assessment and learning. (Keywords: online learning, online assessment, asynchronous online discussion, learning community.)

Educational institutions are increasingly adopting and implementing online learning and asynchronous communication tools. Asynchronous communication “enables groups that are separated in time and space to engage in the active production of shared knowledge” (Gunawardena, Lowe, & Anderson, 1997, p. 410). Educators are faced with the question of understanding the pedagogical characteristics of online learning and asynchronous communication tools to best serve students.

Online learning “requires the reconstruction of student and instructor roles, relations and practices” (Vonderwell, 2004, p. 31). “Insufficient attention to pedagogical questions and concerns arising from the practice of on-line teaching . . . raises questions about assessment of learners in on-line classrooms” (Speck, 2002, p. 5). There is a need to identify effective assessment methods appropriate to online learning and understand how online learning changes the selection, monitoring and managing of assessment activities (“Australian National Training Authority,” 2002). It is important to investigate how assessment techniques can be used to make the feedback loop between instruction and assessment more meaningful (Mandinach, 2005). Asynchronous discussion tools can be used to integrate assessment activities that can help facilitate meaningful learning.

This case study explored asynchronous online discussions, assessment processes, and the meaning students derived from their experiences in five online graduate courses at the Colleges of Education of two Midwestern higher education institutions. The authors propose instructor and student adoption of an understanding of “assessment for learning” and “assessment of learning” in online learning environments. Asynchronous discussion tools can support the process of assessment for learning and assessment of learning to enhance student learning.

There is a need to understand how asynchronous discussion may facilitate and impact these processes.

THEORETICAL FRAMEWORK

Assessment is an important aspect of any teaching and learning system (Benson, 2003). Assessment events drive learning outcomes and are essential for the design and structure of a learning environment (Comeaux, 2005). Assessment includes all activities that teachers and students undertake to get information that can be used diagnostically to alter teaching and learning (Black & William, 1998). Summative or formative, assessment plays an important role in the learning process. Summative assessment is when the students' status with respect to educational variables of interest is determined (Popham, 2002). Assessment becomes formative when the information is used to adapt teaching and learning to meet student needs (Boston, 2002).

There is a distinction between "assessment of learning (assessment for the purposes of grading and reporting with its own established procedures) and assessment for learning (assessment whose purpose is to enable students, through effective feedback, to fully understand their own learning and the goals they are aiming for)" (Elwood & Klenowski, 2002, p. 243). "The principles of assessment do not change in an online environment" (Benson, 2003, p. 71). Summative and formative assessment will directly affect learning, whether online or traditional, by:

communicating messages about how students should study and what things are most important to learn; providing opportunities for students about how to review, practice, and apply what they've learned; nurturing student ownership and promoting such skills as self-monitoring and self-evaluation. (Brookhart, 1997, p. 164)

Online environments can be exploited to promote "assessment as a part of learning" (Russell, Elton, Swinglehurst & Greenhalgh, 2006, p. 495). Russell et al. state that an online learning environment "enables assessment to contribute to learning—through its potential to support collaborative learning, and through facilitating high quality feedback between teachers and students" (p. 495). The concept of "assessment for learning" places the student and learning in the center for the assessment as an instructional practice. Both learners and instructors share the ownership and responsibility for assessing their own performance and learning outcomes. Learner-centered assessment can encourage meaningful dialogue, increase collaboration, peer and self-evaluation, and sense of community for a shared purpose (Morgan & O'Reilly, 2001).

Asynchronous discussion tools can be used in classroom assessment to determine "what students are learning in the classroom and how well they are learning" (Angelo & Cross, 1993, p. 41). Classroom assessment can provide instructors with immediate feedback to promote student learning and progress and help students take ownership of their learning. Student awareness and practice in classroom assessment techniques can support higher order thinking and skills. Techniques for classroom assessment "require learners to engage in simple acts of metacognition

to reflect on and assess their own understanding of the content they are learning” (Angelo & Cross, 1993, p. 120).

Learners need regular practice in assessment to become self-monitoring and independent (Angelo, 1995). Online learners need to manage their own learning through self- and peer-assessment, discovery learning, reflection, and articulation (“Australian National Training Authority,” 2002). Students need to take an active role by planning, monitoring, and then reflecting and evaluating not only the learning tasks but the processes of learning as well (McLoughlin & Luca, 2002). These processes require a learning environment that supports this active student role.

Online discussion technology gives the ability to every learner to respond to questions (Robles & Braathen, 2002), participate equally, and offer a potential to support the co-construction of knowledge through meaningful discourse (Gilbert & Dabbagh, 2005). In a study, over half of the students from three online courses reported that they learned a great deal from their peers through online discussions with 78% of the students valuing online discussion as a chance to share opinions among peers and instructors (Wu & Hiltz, 2004). Conversely, some researchers argue that the virtual learning interface of an online discussion forum may not promote the coherent and interactive dialogue necessary for conversational modes of learning (Hewitt, 2001; Thomas, 2002).

The instructor’s role in online learning is often seen as a facilitator, a mentor, or a coach. An essential role of the facilitator is to overcome incoherence, provide feedback and scaffold student learning. Positive correlation was found between teacher immediacy behaviors and student learning (Sanders & Wiseman, 1990). Rovai (2001) cautioned instructors to balance immediacy by providing students a reasonable amount of time and opportunity to respond. Immediacy behaviors of the instructor and student expectations may influence student learning and metacognitive processes. Instructors should structure a feedback mechanism that will encourage student inquiry, collaboration and metacognitive feedback and self-assessment strategies.

An essential element of communication, feedback, interaction, and assessment process in the online classroom is writing (Liang & Creasy, 2004; Speck, 2002). “How students learn to write in on-line classrooms, as in other classrooms, is wed to what students write to show that they are learning” (Speck, 2002, p. 16). Online classrooms can benefit from alternative assessment methods structured to give freedom to the students in their decision making process and subscribe to the writing process (Speck, 2002). Speck continued, “...and professors in such classrooms will design assignments that allow for interplay between process and product, between formative and summative assessment” (Speck, 2002, p. 15).

Assessment of online learning is not to be conducted as it has been in a traditional face-to-face classroom (Reeves, 2000). Reeves suggested, “Traditional assessment measures are unlikely to reveal the complexities of student-centered online learning environments that are radically different from the dominant teacher-centered instructional paradigm” (p.109). He suggests cognitive, performance, and portfolio assessments for integrating alternative assessment approaches into online learning. Herron and Wright (2006) assert that assessment guides the design of

an online course. Instructors should use a variety of assessment tools such as self-assessment and peer-assessment methods, tasks that encourage critical thinking and collaboration skills of students in their learning and assessment activities. Robles and Braathen (2002) emphasize the importance of the basic tenets of assessment. They said,

The opportunity for online education brings about new considerations in assessment. Online assessment is more than just testing and evaluation of students. By keeping in mind some basic tenets of assessment, online educators can adapt their assessment activities to provide useful feedback, accountability and opportunities to demonstrate quality. (p. 39)

There is a need to investigate how asynchronous discussions are used or can be used for successful learning and assessment events. This case study explored asynchronous online discussions, assessment processes, and the meaning graduate students derived from their experiences of assessment in online discussions. The research questions were:

1. How are asynchronous discussions used in the assessment process of online learning?
2. What meaning do the students derive from their experiences with respect to assessment in online asynchronous discussions?

METHODS AND PROCEDURES

This study employed the case study approach to examine assessment in online asynchronous discussion. A case study is a “detailed examination of one setting, or a single subject, a single depository of documents, or one particular event” (Bogdan & Biklen, 1998, p. 54). Case study results in a rich and holistic account of a phenomenon anchored in real life situations and offers insight and illuminates meaning that expands the readers’ experiences (Merriam, 1998) in their construction of knowledge (Stake, 1994). As quoted in Yin (2003, p. 12), according to Schramm “The essence of a case study... is that it tries to illuminate a decision or a set of decisions: why they were taken, how they were implemented, and with what result.”

Table 1: The Number and Type of Discussion Per Course

Courses	Threaded discussion	Non-threaded discussion	Post-discussion assessment (i.e., reflection paper)
Educational Research	N/A	8	No
Planning for Technology	6	N/A	Yes
Technology in the Class 1	N/A	10	No
Technology in the Class 2	N/A	10	No
Technology in the Class 3	6	N/A	Yes

Table 2: Asynchronous Discussion Assessment Guidelines for the Educational Research Course

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- Mastery of subject matter
 - Application of ideas and concepts
 - Clearly written with sufficient detail and thoroughness
 - Considerate of others' ideas and opinions
 - Provides reflective feedback by asking additional questions or providing useful information or suggestions
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The Context and the Participants

The participants were from five master's level online courses that were observed over the course of three semesters at the Colleges of Education of two Midwestern higher education institutions. The courses observed were Educational Research, Planning for Technology and three sections of Technology in the Classroom. The majority of the students were inservice teachers who were pursuing a master's degree. All the courses used WebCT as the course management tool and included weekly or bi-weekly asynchronous discussion as a participation requirement for grade. Slightly more than one-third of the students had previous experience using the WebCT discussion board. Two courses used threaded discussions versus non-threaded discussions (Table 1).

All the courses observed were structured through assessment criteria or protocols to assess student participation and learning. The Educational Research course used discussion assessment guidelines (Table 2). The Planning for Technology course and one section of the Technology in the Classroom course required students to write a summary and reflection of each discussion. The Planning for Technology course used a 14-item discussion evaluation criterion (Vonderwell & Zachariah, 2005). Table 3 (page 314) includes the asynchronous discussion assessment criteria for this course. Instructors of the remaining courses required students to respond to corresponding chapter questions in the course textbook or respond to instructor-created questions based on readings from Web sites and journal articles. Students were required to post at least two times per discussion and respond to at least one posting by commenting or asking a question.

Data Collection and Data Analysis

Three data sources were used for data collection and analysis from the five courses: online observations of the asynchronous discussions, an open-ended online survey conducted with students, and the transcript of an asynchronous discussion on "online learning and teaching," which was implemented in one of the courses. One of the researchers was the instructor of two of the courses, Planning for Technology and a section of Technology in the Classroom. Two of the researchers observed the online discussions and took notes based on: a) procedures or criteria for assessing the discussions, b) participant involvement and interaction in the discussions, c) issues emerged with respect to assessment. Sixteen percent (12) of the total number of the students in the five courses responded to the open-ended survey with 10 questions (Appendix). The survey questions were revised and reworded as the data collection and data analysis took place. Thirty-three percent (25) of the

Table 3: Asynchronous Discussion Assessment Criteria for the Planning for Technology Course

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- Discussion is substantive and relates to key questions. (1 point)
 - Discussion is thought provoking, insightful, reflective, challenging. (1 point)
 - Discussion provokes interest and deeper investigation of the topic. (1 point)
 - Discussion is targeted for the knowledge construction of the group and self-learning. (2 points)
 - Posts documents, examples, etc. to be shared with the class. (2 points)
 - Uses personal/professional examples demonstrating application of key issues. (1 point)
 - Refers to readings, literature review, theory, research to discuss position and insight. (4 points)
 - Analyzes others' discussions and reflects on the issues discussed. (2 points).
 - Refers to others' discussions and addresses previous discussions posted. (1 point).
 - Offers solutions and suggestions to the issues raised. (2 points)
 - Initiates discussion, raises an issue, concern, suggestion. (1 point)
 - Demonstrates understanding and interest in the topic. (1 point)
 - Feedback to class members is constructive, specific, and supportive. (1 point)
 - Demonstrates timely and valuable online presence. (5 points)
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total number of the students participated in the "online learning and teaching" discussion. The students discussed the advantages and disadvantages of online discussions, whether they improve student learning, and how online discussions should be structured to improve learning.

Thematic data analysis, "a process for encoding qualitative information" (Boyatzis, 1998, p. vi) was used to analyze the data sources. Each data source was analyzed independently by the researchers for patterns which were coded inductively and sorted for emerging themes. The data analysis was ongoing through double-checking the findings, coding, generating categories, themes and patterns. Data triangulation was secured by using multiple sources (online observations of the asynchronous discussions, an online open-ended survey conducted with students, and the transcript of an asynchronous discussion), double-checking findings, and checking for relationships that converge (Miles & Huberman, 1994) to establish credibility. Triangulation was also conducted by cross checking and comparing findings among the three researchers.

FINDINGS

From the findings, the following components were identified as important aspects of assessment in online discussions and student experiences: structure, learning community, self-regulatory cognitions, learner autonomy, and student writing skills.

Structure

The findings indicated that structure of an online discussion is essential for successful learning and assessment. The students reported that a discussion topic that is not structured properly impacts student responses, and thus restricts learning. Classroom observations showed that threaded discussions versus non-threaded discussions initiated more in-depth and diverse responses, and helped develop an interactive response pattern. Non-threaded discussions involved inquiry into a single question whereas threaded discussions involved inquiry into several questions through multiple threads. A majority of the students favored threaded discussions over non-threaded discussions. Discussions that required students to respond to a single question caused redundant student responses. Mike, an online learner, noted that particularly non-threaded discussions resulted in redundant and repetitive responses thus limiting learning "at no fault of the students." Tracy said, "The WebCT discussions allowed for in-depth responses [compared to synchronous chat sessions], but often, one [student] or two [students] made a point, and everyone else either restated their response or simply said, 'I agree.'" Joe, who had taken several online courses at the graduate level, reported:

If the discussions aren't repetitive or there aren't too many, then most students can and are willing to keep up [with the postings]. When the discussion becomes too large or takes place too frequently, I get bored, and I've seen others step back and do the minimum amount of work.

Teresa added:

It is really hard to participate in a discussion when it is obvious that there is nothing left to talk about. The discussion questions need to be designed and monitored to grow and adapt to the responses from students so that they don't get repetitive and boring.

The students agreed that discussions should involve a variety of assessment methods rather than a repetitive structure in the asynchronous online discussions. Sue, who had prior experience with asynchronous discussions throughout her graduate studies, emphasized that variety and accountability of learning and assessment activities would result in more effective learning and assessment. She said, "A variety of question types, a variety of forums (IM, WebCT, etc.) and a variety of assessment. If someone knows that they only have to respond to one question, there is nothing to make them read everything." Some students suggested that providing options for students to choose among topics of interest can diminish redundancy of the responses in the discussions. The students expressed that it was hard to think about what to write if they believed everything had been discussed already. To avoid this or to avoid repetition, some students reported that they tried to post their responses before everyone else had a chance.

Most students expressed the belief that discussions were an essential component in the learning process and valued that participation was built into the assessment. Based on the five courses observed, there was no consistency among the

requirements for participation and assessment of the online discussions. Classroom observations and student reports showed that assessment criteria, in general, assessed proficiency in the content knowledge, collaboration, and participation. When asked what asynchronous discussions assess, Hillary replied that “application of materials and subject matter seem to be the most obvious aspects of a course that can be assessed through discussion.”

Assessment criteria were essential in guiding student participation and contribution to the discussion postings. Two students reported that “discussions did not get very far [in-depth]” if there was not an assessment criteria to take into account. The students stated that assessment criteria and rubrics were essential to assess self-learning and peer learning, and these types of guidelines helped enable fair assessment of the student participation. They suggested that rubrics or criteria need to be detailed, with clear and specific instructions to the topic rather than a general criteria applied across discussion topics. Kia said, “We do not use rubrics in my online class... I feel that if we had rubrics, they would be very useful. I think it would allow the online learner to have a detailed description of what is expected.” Teresa commented, “It would be nice if the criteria/rubrics were more specific or delivered for each particular assignment (weekly) instead of being the same throughout the duration of the course.”

Observations and student reports indicated that most instructors used student reflection as an assessment and learning component. Tracy commented that her class discussion protocols “required that postings include reflective feedback to classmates’ postings.” Tim’s response was that discussions assess a learner’s understanding of the content as well as their reflection and application of the information. Joe, also with previous online learning experience, noted from his experiences:

Every instructor is a little bit different as far as this goes. Most [instructors] require that your post reflects the fact that you have read the content and put some thought into the post. Most of the time, you are required to respond to at least one other person in the discussions as well and encouraged to move the discussion forward by asking questions or providing additional information for a topic. A few of the instructors I have had have assigned people certain roles to play within the discussion for the week. This works out nicely.

Learning Community

The students reported that “most learning takes place” through asynchronous discussions. A student’s comment, “You are getting a variety of viewpoints on one lesson or concept and sometimes someone can explain a concept in a way that the professor may not” illustrates peer learning and scaffolding through the discussions. The students recognized the importance of a learning community. Tim said, “I learn much more from other students. There is more time for everyone to participate and therefore learn from each other in the online environment.” Another response was: “The participants influence the discussions. Good prompts and responses keep the conversation going.” Hillary, a graduate student from the Educational Research

course, reflected on the importance of building a sense of community in online courses:

Asynchronous discussion plays a vital role in the learning that takes place in an online course. In order for a discussion to be effective and for learners to feel comfortable sharing their opinions with a group they may not know, it is necessary for a sense of community to be built first. Participants should be allowed to get to know one another (through icebreakers, etc.).

Findings indicated that the students used the discussions to assess peer learning by looking at peers' views and ideas. Mike wrote:

It is necessary for people to share ideas and viewpoints on issues. When we are questioned or given further information on a topic, we expand our knowledge base because we are forced to dig deeper into a topic than we may have done otherwise on our own.

The students monitored and evaluated each other's participation. Sue emphasized that the peers should be engaged in the discussions rather than "faking it." For Sue, the quality and depth of peer participation were important. Mike thought that by reading student responses it was easy to determine which students understood the discussion. These reports indicate that students monitor and assess peer participation and quality of responses.

Instructor presence and student participation quality influenced the level of student involvement in the discussions. The quality of the participation was important to model and sustain a high standard level of student engagement and motivation. A student reflected, "Online discussions are critical. Learning is a discussion and students studying in isolation need time to interact with one another. In terms of assessment, discussions show the level of involvement with the course as well as the depth of study." The students felt that the discussions were a result of a group working together and everyone was responsible for participating and contributing to the discussions. Hillary expressed, "The group [learners] should have an overall understanding about what is to be accomplished and how to reach their goals. There should be a supportive environment that is conducive to both sharing and being open to others' opinions." Donna emphasized that everyone was an equal participant and that all the students had to take responsibility to work together. She said:

I feel that I am an equal participant. If I do not participate, then I can't expect everyone else to cover [the topics to be discussed]. I try to respond when I can and sometimes come up with a new question or situation for others to respond to. I try to contribute to group learning.

Teresa reported:

I try to keep as involved as possible, but I am also very conscious of how much I say and try hard to not be the one monopolizing the

conversation. I have to walk a fine line between participating and being irritating.

The instructors used asynchronous discussions to assess student learning, progress and contribution to class. Findings indicated that instructor feedback was important for student learning and it was sought as an essential element of assessment by students. The students suggested that instructors should guide the learning and assessment activities and provide feedback. Alicia stated that "By giving the students guiding questions, the discussion stays on track and there is something to evaluate. . . The facilitator must have clear expectations." Observations of the online courses found that the majority of the instructors facilitated the discussions by responding to individual student questions as well as addressing the whole class. The instructors summarized key points and intervened when necessary and scaffold student responses. Instructor intervention took place when the discussion postings were repeated or the topic of the discussion moved away from the original topic. For example, a student reported that his/her instructor gave feedback on how to improve the quality of the participation when she felt that the postings "have been weak."

One course instructor participated less frequently and intervened only when specific questions were not answered or there was an issue to be clarified. Another instructor posted discussion questions on the discussion board, but rarely responded to student questions. The majority of the students responded to the instructor questions rather than engaging in a dialogue with each other. It was observed that the messages posted were directed towards answering the instructor questions to comply with the protocol the instructor had provided. The protocol was to post at least twice per discussion by posting at least one question and responding to at least one. These findings indicate that there is a connection amongst structure of a discussion, learning community and assessment protocols.

Self-Regulatory Cognitions and Activities

The findings suggest that self-regulatory cognitions and activities, such as reflection, metacognition and self-regulation, were essential aspects of learning and assessment processes in the online learning environment. Observations of the asynchronous discussions and the student reports indicated that self-regulatory cognitions and activities occurred in a variety of ways. John reported, "I think the discussions make everyone more responsible. A teacher might not notice participation in a classroom, but he or she can count, by number of postings, how much each student has contributed." Hillary stated that whether in a traditional face-to-face class or an online class, she was responsible for participating in her "own learning process." She said:

The only difference is the setting. Online discussion is just as effective for learning and assessment. Participating online takes a little more effort than walking to class and sitting on a chair.

Self regulation refers to the degree to which "students are metacognitively, motivationally, and behaviorally active participants in their own learning process"

(Zimmerman, 2001, p. 5). Metacognition, knowledge and beliefs about one's own cognitive processes, is an aspect of self-regulation. Asynchronous discussions enabled and encouraged monitoring and assessment of learning. This was illustrated when Joe expressed that he could review the responses that he had submitted and see "where he may have weaknesses and strengths." He wrote:

Unlike a traditional course, the online materials are to be learned and applied through these asynchronous discussions. It is easy for me to look back at the responses I have submitted to see where I may have weakness and strength; whereas in a traditional course, it is difficult to remember exactly what was said in class.

Writing in the online discussions required students to rethink and assess their own understanding of the content before they posted their responses. Mike wrote, "It [discussion] helps me to verbalize my thoughts which helps me to learn more. I must really understand [the content] in order to put the thought into writing." These examples imply that online asynchronous discussions help enable and support metacognitive processes.

One instructor had specific roles, such as discussion facilitator, co-facilitator and critical reflector, assigned to the students in the discussions. The course observations and student reports indicated that asynchronous discussions that had roles assigned to students allowed the role players to closely monitor other students' learning and progress. Mary, who had taken the role of the discussion facilitator, stated that her role enabled her to take a closer look at her content knowledge and her peers' content knowledge. Observations and student reports indicated that different roles students took on indicated that these roles enabled the students to evaluate their own learning and fostered student ownership of learning.

The study findings indicated that online discussions facilitated reflective and self-assessment processes. Non-real time aspect of the asynchronous discussions gave the students enough time to "share a composed thought or question... and be able to reword messages" before posting them online. Time for reflection and being able to revisit the discussion messages posted allowed the students to assess their own contribution. Mike asserted:

The discussions allow me to revisit the thoughts I have shared with the other members of the course. It also allows me to see how others view the content of the course. Rather than try to take sloppy notes during a discussion [as it would be in a traditional face-to-face classroom], I am able to look back and review the responses of other students at my leisure.

Mary reflected on her experiences:

I believe I learned much in this course through the asynchronous discussions. I love being able to share a more composed thought or question with the class. In a traditional classroom, you often do not have enough time to state your idea or question clearly. It is nice to

be able to take as much time as you need online and to be able to reword as necessary before posting. It is also nice to be able to take the time to think about what other students have said or asked and then post a reply or question once you have had enough time to carefully consider your response.

Learner Autonomy

Autonomous learners accept responsibility for their learning. The students reported that the asynchronous nature of online discussions allowed them to revisit their thoughts in their postings. The findings implied that student self-determination and responsibility influenced the degree that the students took advantage of the asynchronous nature of online discussions. The students asked questions to their classmates when they did not understand or need more information. This is an indication of learner autonomy that enabled students to inquire further and seek assistance. Amy's statement illustrates autonomy:

I think that it is important for learners to become autonomous in their own learning process. I appreciate when a professor gives me the tools to help me reach my goals, but I prefer to work independently. This means that when a significant topic is mentioned in class, it is my purpose to get as much information outside of the classroom environment (whether online or in the traditional setting). It is my responsibility to learn as much as I can to become proficient enough to teach others.

Learner autonomy was demonstrated when students commented that online discussions should provide choices for the students from the discussion topics. Hillary commented, "I think more options should be provided for discussion and students should pick one topic to discuss from the choices." When asked, what an online discussion assesses, student responses included: "Online discussions assess whether the student is an active participant in their learning, is willing to adapt to new ways of learning, and meeting deadlines." These statements imply that the students sought that online discussions are structured to enable student autonomy. Most students suggested that the instructors should provide more choices of discussion topics. Joe emphasized, "Once the question has been answered, it does not make sense to have people keep responding to the same question. Instructors should give the [discussion topic] choices up front so each discussion could be well developed and all students have a chance to participate." He further suggested that students should be able to choose from a variety of discussion topics to participate.

Writing Skills

Peer writing skills and understanding of the tasks required were found to be influential on the discussions' success. Specifically, inexperienced online learners struggled in figuring out the writing conventions that emerge in the classroom discussions. Mike's comment illustrated the importance of familiarity of the writing conventions in a discussion. He noted that the online learner must be a "wordsmith to fully explain themselves appropriately in graduate-level coursework..." He

continued, "The same applies to teaching of online classes. The instructor must be able to express their expectations in print..." Mike cautioned that a student who does not have good writing skills may appear to be less competent and unable to complete the requirements of the course. He further elaborated that the instructors need to be able to differentiate between student writing skills in the discussion and mastery of the content. He said,

If a student has difficulty expressing their ideas in print, they will appear to have little understanding of the course content. There is a fine line between not being able to express ideas in print and proving that you have mastered the content of the course. I am sure with practice, an instructor can see some difference in the two, but it would be tough to truly make a distinction between the two.

The study findings illustrated the importance of writing skills in student engagement of learning in asynchronous discussions. Writing skills can influence the extent that learning is articulated and how instructors assess student responses in a discussion. A student commented that articulation of learning is also an important aspect of assessment. He stated that the discussion postings "demonstrate whether [or not] the student ... has grasped the meaning of the topic for the week. If so then he/she can articulate learning that is taking place in the online forum." Hillary stated, "It is difficult to express yourself in written words. In some cases, constructive cases can be mistaken for someone being rude. In this way, it is imperative to express oneself clearly and to be concise." Another student's comment was, "I believe writing skills are as important as the skills of understanding, interpreting and implementing the knowledge gained in the coursework within your papers." His comment illustrates the importance of writing skills in the online learning environment for assessment.

DISCUSSION

The researchers in this study examined how asynchronous online discussion was used in the assessment process of online learning and the meaning students derived from their experiences. Overall conclusions from the findings indicate that asynchronous online discussions facilitate a multidimensional process of assessment demonstrated in the aspects of discussion structure, self-regulatory cognitions and activities, learner autonomy, learning community and student writing skills (Figure 1, page 322). The online observations and student responses indicated that structure is an essential factor in the design, implementation and assessment of asynchronous discussions. The findings imply that how a discussion is structured impacts student participation and responsiveness in learning and assessment activities.

Gilbert and Dabbagh (2005) examined the influence of structuredness of asynchronous online discussion protocols and evaluation rubrics on meaningful discourse. Their analyses revealed that facilitator guidelines, evaluation rubrics and posting protocol items impacted meaningful discourse and deeper understanding of the course content. Other studies showed that the discussion interface can significantly influence the quality and the quantity of the interactions between

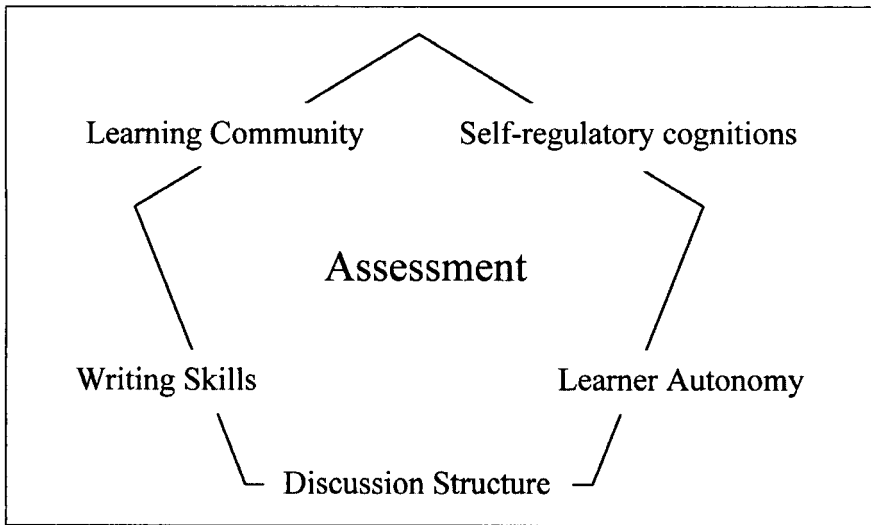


Figure 1. Asynchronous online discussions and the assessment process

peers, students and instructor, and student and content (Hewitt, 2001, 2003; Swan, 2004).

In the study, it was observed that threaded and non-threaded discussions, and assessment criteria impacted student participation. Although most of the students favored threaded discussions over non-threaded discussions, a majority of the courses used only non-threaded discussions that had led to redundant responses. On the other hand, threaded discussions had initiated more in-depth and diverse responses which resulted an interactive discussion pattern among the students. The assessment criteria, as a structure element, influenced student responses and participation. The findings in this study imply that assessment criteria must address student learning outcomes and guide students in the process to reach the discussion goal. Structure is also related to the learning community as a factor in learning and assessment. In this study, the students observed and monitored each other's participation. This enabled the students to assess the quality of the responses. Some instructors assigned roles for the discussions while others did not. The extent of instructor presence was a factor in the student participation quality. An advantage of online discussion is that it provides an opportunity for every learner to be an active participant (Robles & Braathen, 2002). Structure implies student accountability and a degree of peer interaction—students will have to communicate and work together in a learning community. The students valued their experiences, and as they have stated “most learning takes place” through the discussions. How assessment is structured change student engagement and value of the discussions. Online instructors need to consider different strategies to structure discussion as a learning and assessment environment.

Another aspect of structure is the balance between structure and autonomy. Online asynchronous discussion enables students to work independent of time constraints, and assess their own learning through instructor feedback and peer responses. Learner autonomy is important in the process of assessment for learning

(Liang & Creasy, 2004). At the same time, autonomy and structure are not mutually exclusive (Alderman, 2004). This was confirmed by the students when they stated that assessment criteria were essential to help them guide and assess their learning. Autonomy depends upon learners' ability to control their own learning, their level of personal responsibility and self-directedness. Learner autonomy is "not a monolithic construct... it is comprised of a number of self-regulatory learning attributes that together contribute to learner autonomy in online learning contexts" (Lynch & Dembo, 2004, p. 22). Structure, interaction, and learner autonomy are key variables to consider in distance learning (Moore & Kearsley, 1996). Structure influences the extent to which students are autonomous. If structure permits autonomy, then self-regulatory behaviors and strategies by the students are essential if learning is to occur.

In this study, there were numerous indications of how students used self-regulatory processes and strategies. Metacognitive processes were the most frequent component mentioned by the students. Metacognition is described as an awareness of learning, how learners learn, self-monitor, and self-assess their own learning (Borkowski & Thorpe, 1994). Certain aspects of the online discussions elicited metacognitive monitoring and assessment. Instructor and peer postings and the structure of the discussion required that students evaluate their own understanding of the concept before posting their responses. The students also compared and contrasted their own learning and progress to their peers. The students monitored and assessed the quality of peer and instructor participation. This is an important aspect of learning that online instructors need to consider when designing online discussion and assessment procedures. Peer and instructor participation, and relations can enable an ongoing and seamless integration of assessment processes in online discussions. Structure of online discussions should engage students in self-regulatory processes in which learners can assess their own learning and growth.

The findings imply that writing for a group in the asynchronous environment facilitated reflection, metacognitive processes, and articulation of students' own learning. When responses to questions were made, students sought alternative responses that may have facilitated in-depth inquiry to the topic as well as enforced reflection and metacognition. Students recognized the importance of writing skills to understand, interpret, and implement the content knowledge. In assessment, "a focus on self-knowledge implies that students should have the opportunity to assess their own strengths and weaknesses" (Pintrich, 2002, p. 221). This type of student engagement enables learners to informally and actively assess their own learning.

RECOMMENDATIONS FOR PRACTICE AND RESEARCH

Online instructors need to take into account assessment as a process as well as assessment as an outcome. Assessment as a process requires that online learning activities facilitate self-assessment, peer-assessment, self-regulatory mechanisms, and learner autonomy. An activity that allows students to think and rethink issues that are being discussed or have not been discussed, facilitates a dialog within self and with the members of a classroom. The meaning that students make out of their

discussion activities needs to support student practices in assessment for learning and assessment of learning. Taking a perspective of a combination of these two approaches can maximize student learning.

Online instructors need to understand assessment processes and the factors that influence assessment for learning. The conceptualization of assessment for learning in asynchronous learning environments shifts the position of assessment into a formative, structured and actively performed by the students and the instructors. Structuring a discussion with appropriate assessment criteria is essential for student participation and learning. Metacognitive guides in discussions and student awareness of these metacognitive processes can enhance assessment practices. Self-assessment and peer-assessment techniques can be developed and embedded in online discussions.

Instructors can use the discussion postings to assess student learning and progress. Discussion summaries or reflection papers at the end of a discussion can be used for student analysis and reflection of the discussion content. Reflection papers allow students to internalize what they have learned through the discussions (Clark, 2000). Pendergast (2006), in his online courses, posts a short survey the week following the discussion. The students then are given several days to "reply to the survey and the results are then posted for the class to read. This forces the students to form an opinion and gives them a clear-cut understanding of how their opinion compares to that of their classmates" (p. 12). Peer-to-peer tasks, collaborative buddies, self assessment activities, and peer assessment activities can be incorporated into the assessment process.

A variety of assessment methods and strategies can increase student interest and engagement in discussions. Assessment criteria need to include student engagement in the process of assessment for learning. This type of assessment will allow students to fully understand their own learning and their own goals (Elwood & Klenowski, 2002). Online instructors need to develop and share best practices that facilitate student self-regulatory mechanisms and productive learner autonomy. Attention into the self-regulatory mechanisms, how and to what extent these mechanisms engage students in their assessment of own learning can improve instructor practice and student learning.

An indepth investigation of assessment processes in online discussions can help effective utilization of asynchronous learning tools. Further research is needed to understand the characteristics of online classroom assessment, and what assessment techniques, strategies or criteria enhance student learning and assessment. Researchers can investigate how learner autonomy, self-regulatory mechanisms, assessment protocols, and criteria are used in online discussions and to what extent they impact student engagement in the assessment process.

CONCLUSION

This case study explored asynchronous online discussions, assessment processes, and the meaning graduate students derived from their experiences with respect to assessment in online discussions. As the findings indicate, there are several dimensions that influence student learning and assessment through online discussions. Structure, self-regulatory cognitions, learner autonomy, learning

community, and writing skills are important factors that influence assessment activities and assessment as a process. Educators need to look more carefully into the notions of “assessment for learning” as well as “assessment of learning.” Online learning pedagogy can benefit from a notion of “assessment as inquiry” and “assessment of constructed knowledge” in asynchronous discussions.

Contributors

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APPENDIX

Open-Ended Survey: Assessment and Asynchronous Discussions in Online Learning

1. What do you think is the role of online discussion in learning and assessment?
2. What do you think asynchronous discussions assess in online classrooms?
3. What makes an online discussion successful for you as a learner and for your classmates?
4. What do you think of your role as a learner and a participant in online discussions?
5. What factors influence your participation in online discussions to ensure successful learning and assessment of your learning?
6. What do you think the role of the instructor and your peers are for learning and assessment in online discussions?
7. What assessment criteria do you think online instructors should use for assessing online discussions?
8. How do you think online discussions influence your learning and your peers' learning?
9. Do you use any strategies when participating in online discussions to improve your learning, your peers' learning? If so, what are those strategies?
10. Please add your other thoughts with respect to learning and assessment through online discussions.

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