Learning About Learning: Metacognition and Reflection in Online Teaching and Learning

As thousands of courses transitioned to online formats in 2020, institutions and instructors scrambled to adapt and provide high-quality online education. Although technological competence is important for online educators' effectiveness, Nilson and Goodson (2018) argue that online course designs need to move beyond a pedagogy focused on the bells and whistles of technology as a tool, towards one focused on deep, long-lasting learning. One way online instructors can improve learning and teaching is by using metacognitive practices in their teaching and in pedagogical approaches. Metacognitive practices increase students' abilities to transfer or adapt their learning to new contexts and tasks (Bransford et al., 2000; Palincsar and Brown, 1984; Scardamalia et al., 1984; Schoenfeld, 1983, 1985, 1991). This article describes the purposes and uses of reflection for teaching and learning in online courses, timing and curricular design considerations, approaches for creating periodic teaching and learning reflections in online courses, and strategies for adapting a reflection assignment or activity for online courses.

Purposes and Uses of Reflections

When designing online courses, faculty must "begin with the end in mind" (Covey, 1989, p. 45). Important questions include the following: How do I want to build upon previous learning in the course? What learning do I want students to retain throughout the semester and long after the semester? What do students need to learn about learning? What do they need to learn about the subject matter? "Our reflection on what counts should highlight what will have enduring value for our students, not just list some course objectives that focus on values and attitudes" (Nilson and Goodson, 2018, chap. 2, para. 4). This requires thought about what is really important in courses, not just in terms of the need to develop relevant skills, but aptitudes for learning that will benefit students long after the semester ends. Moreover, instructor reflection helps instructors hone their teaching throughout a given semester, and reflection aids students as they develop identities as learners and students. Reflection allows students to imagine themselves as writers, readers, and scholars of the topic under study. Without reflection, coursework is often just a series of assignments rather than an intentionally developed pedagogy and curriculum that scaffolds students' learning and creates deep learning experiences. Deep learning experiences move beyond merely completing assignments, and require significant thought and engagement on students' parts. Reflection and metacognitive activities emphasize the importance and meaning of experiences, underscoring the value of students' current knowledge and the knowledge they develop and create throughout a course.

Reflection for Metacognition

Metacognitive practices have the ability to encourage thinking about thinking and increase students' ability to transfer or adapt their learning to new contexts and tasks (Bransford et al., 2000; Palincsar and Brown, 1984; Scardamalia et al., 1984; Schoenfeld, 1983, 1985, 1991). When instructors develop reflection activities that encourage metacognition, students are more readily able to adjust and adapt as learners. "If people lack the skills to produce correct answers, they are also cursed with an inability to know when their answers, or anyone else's, are right or wrong." (Dunning et al., 2003, p. 85). Reflection on completed assignments and on the processes students use as they learn facilitates their ability to notice mistakes and to correct their own errors, ultimately leading to more independence as learners, readers, and writers. Students who are able to reflect on their learning and learning processes increase their problem-solving abilities (Mason and Singh, 2010). Metacognitive and reflective activities create a sense of renewal or closure as students complete coursework. Moreover, faculty members are more than facilitators of reflection and metacognition. Effective integration of reflection in courses requires instructors to model reflection and metacognition in their own work as educators as they think through the effectiveness of pedagogy and curriculum and make adjustments in the course throughout the semester as needed (Guo, 2020).

Timing and Integrating Reflection and Metacognition Into Online Courses

Palloff and Pratt's (2013) and Stavredes (2011) conceptualizations of effective online teaching and learning encourage the integration of reflections into collaborative, content-based, periodic course reflections. Instructors should intentionally consider how timing might influence reflection by asking questions such as: When would be

the most critical times to reflect, and why? Additionally, instructors should model reflection throughout the term so students can visualize what metacognition "looks like" for an instructor-learner and witness instructors modeling the value and importance of using the results of reflective learning. Asking students to engage in metacognitive activities at strategic points in the term encourages students to consider their practices and how they might change behaviors, which could lead to increased learning and improved studying and critical thinking practices.

Course reflections help students and faculty gauge students' current knowledge and what students believe they need to know about the subject under study. Faculty members can ask questions such as: What do you know? What do you need to know? How do you learn best? How would you teach this course? Mid-course feedback and reflection can provide instructors with information about how to adjust courses for the remaining half of the term and spur the instructor to engage in further reflection on how learning is occurring and what is and is not working in a course. Mid-course reflections allow students to assess their work products and learning processes at a point when they are still able to adjust and adapt to improve these processes and to engage in self-regulation, making significant changes in their work habits and seeking additional assistance when needed. Final course reflections are useful for bringing closure to the course, not only giving the instructor feedback on course effectiveness, but also feedback on students' accomplishments in the course and on the specific strategies and processes they used to accomplish course objectives.

Assignment and test debriefing allow students to reflect on their specific processes for completing assignments and studying for assessments such as quizzes and tests. This can encourage students to change course if they are not using effective strategies to study or work on assignments. Faculty can ask students what they would do if they had more time to prepare for a test or to complete an assignment. Further questions include the following: How did you prepare for the test? How much time was spent studying? What grade do you believe you deserve based on performance and not effort?

Another way faculty can encourage student metacognition is through student planning/goalsetting activities. Instructors can develop timelines with students to help them think through how they intend to complete learning activities step-by-step. For example, the instructor may work with students during Zoom sessions to create timelines for developing and completing course projects with benchmarks along the way to break tasks down into digestible parts.

Other strategies for encouraging reflection are letter writing and journaling. These reflective assignments require students to write letters or journal entries to the instructor throughout the course to discuss their progress and other important topics to them. These activities allow for reflection and student and faculty relationship building, since instructors can write back to students. In reflective journal entries, students select significant learnings, envision how they could apply these learnings to future situations, and commit to an action plan to consciously modify their behaviors.

Instructors can develop many creative ways to encourage reflection and metacognitive learning. For example, an effective metacognitive assignment that I use is asking students to identify a song that reflects their learning up to that point in the semester. Students post a link to the song on the discussion board and then write a reflection about the ways the song is indicative of their learning. They quote from the song to discuss learning and reflections with peers on the discussion board. Another effective metacognitive assignment that has assisted students in reflecting on their learning practices in- and outside of the classroom is the grit reflection assignment. Students complete Angela Duckworth's grit test (https://angeladuckworth.com/grit-scale/) and reflect on their scores and responses. They think about their learning habits and their ability to persevere, and then they strategize to improve upon their grit. After this assignment, I frequently notice that students put forth more effort than before because of the explicit discussion and reflection on their ability to complete and persist as they work toward finishing tasks and goals.

Implications for Practice: Developing a Reflective Activity for an Online Class

Reflective students and teachers can collectively learn from their experiences online via written and oral assignments. When developing a reflective activity for an online course, instructors should begin with an outcome in mind (i.e., leadership, team building, or improved critical thinking). Next instructors should consider the class's population and create an activity appropriate for the class demographics. The activity should directly link to a project or experience and vary for types of learning and interests. Importantly, the reflection assignment should actively involve students in a compelling reflection session and be facilitated for maximum participation, creativity, and learning. In a technologically mediated environment, the instructor must consider the most effective ways to deliver the metacognitive activity. For example, these can occur during synchronous videoconference meetings by using breakout rooms for group reflections and sharing. Discussion boards also provide opportunities for sharing reflections on processes and products. When instructors want reflections to be more individualized or to involve more faculty-student

interaction, instructors may use a dropbox for students to submit metacognitive projects and activity results.

Conclusions

Metacognitive activities are important in all learning environments. However, in our current environment of increased online teaching, faculty have opportunities to find new ways to integrate reflection and metacognition through virtual means that ensure students are fully engaged in the process of making meaning. Metacognition positions students as creators and co-creators of knowledge rather than mere consumers. Metacognitive activities have the potential to trigger learning that engages and transforms the mind, not just for the short-term, but well after a class is over. Ultimately, all instructors share a goal of creating an environment that is conducive to long-term, deep learning.

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