Philosophy of Online Communication and Facilitation from a Science Lens

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I believe that online facilitation and learning are best informed through a combination of constructivism and connectivism. Additionally, both Kolb's experiential learning cycle and the community of inquiry model provide a strong scaffold to develop my online practice. Throughout this paper, I will present specific strategies for the online science classroom, as I have the most experience in that discipline.

Beliefs

I feel that constructivist and connectivist theories of learning can jointly inform effective online facilitation and communication. I believe that students actively build their knowledge, but their previous conceptions will the affect the adoption of the constructed knowledge (Ally, 2008; Kolb & Kolb, 2005; Lorsbach & Tobin, 1992). I also believe that ideally knowledge building happens when students interact with each other and their environment in meaningful ways (Ally, 2008; Gunawardena & McIsaac, 2001; Sauter, Uttal, Rapp, Downing, & Jona, 2013).

Kolb's experiential learning cycle can be used to support the creation of scaffolds for learning and the break down preconceptions that negatively impact further learning (Donovan & Bransford, 2005; Kolb & Kolb, 2005; Sewell, 2002). In an online environment concrete experiences, like laboratory tasks, can be difficult to create. However, distance education students can access remote laboratories and "use" authentic scientific equipment to conduct experiments (Sauter et al., 2013) and conduct smaller-scale "kitchen" science in their own homes (Mawn, Carrico, Charuk, Stote, & Lawrence, 2011). These types of experiences help students to contextualize concepts, provide authentic, concrete ways for students to actively test their theories, and help students reflect meaningfully on their learning (Kolb & Kolb, 2005; McComas, 2004; Sauter et al., 2013). I believe that science education must include the

opportunity to develop and conduct laboratory work that is both contextually relevant to the student (science-fair style activities) and authentic to the process of "doing science" (McComas, 2004). As such I would integrate laboratory activities into my online classroom.

Identity

As a Science educator, part of my role is to create learning activities that help students' build new knowledge through authentic experiences – including research, laboratory experiences and discourse with peers (Duit & Treagust, 2003; McComas, 2004; Sewell, 2002). As students navigate these activities I would encourage active reflection and respectful interaction throughout the learning cycle, while providing support when needed (Donovan & Bransford, 2005; Kolb & Kolb, 2005; Mawn et al., 2011).

I feel that for online science education to be contextually relevant, it is important to develop a community of inquiry within the class (Ally, 2008; Kear, 2011). Community building in online classrooms is dependent on many factors outlined in Salmon's Five-Stage Model (Kear, 2011). In order to create a community of inquiry I would first need to understand who my learners are so I could choose a course delivery technology that presented as few barriers as possible; while being prepared to help students experiencing technical issues (Kear, 2011; Gunawardena & McIsaac, 2001; Anderson, 2008). At the beginning of the course, I would clearly articulate expectations to students around respectful interaction, in addition to course content expectations. In order for the students to become familiar with each other and the online system, they would have several low-risk opportunities to interact with their peers at the beginning of the course. This process would take students through stages one and two of Salmon's Five-Stage Model, in addition to developing the social and teaching presences in the community of inquiry framework (Anderson, 2008; Kear, 2011).

If the ultimate goal of classroom is to develop a community of inquiry, clear and open communication between the students, as well as between the teacher and the students, is critical. As the facilitator, I should be prepared to guide students through the process of becoming comfortable and sharing within the online community.

I also feel that students should have opportunities to communicate and collaborate beyond their online community, in order to develop scientific dialogues and enforce their learning (Ally, 2008). Collaboration with experts as well peers in other communities exposes students to different perspectives, leading to richer dialogue and more meaningful learning (Ally, 2008; Gunawardena & McIsaac, 2001). I would seek out these opportunities to create safe experiences with the larger online community.

Mission

I am strongly committed to developing scientifically literate students with an appreciation for the Nature of Science (DeBoer, 2000; McComas, 2004). Although the definition of scientific literacy has changed over time, I understand it to mean having the skills necessary to question, research and synthesize new information (DeBoer, 2000). The interactions between Science, Technology and Society are highly complex, and it is my responsibility to help students navigate those interactions in authentic ways. Additionally, I strongly believe in safe and positive spaces that are respectful of who students are and how they are developing as learners and individuals. I am responsible for creating those spaces within my classroom community.

I have previously discussed some features of my online classroom including: concrete laboratory experiences, the first two stages of community development and interaction with the larger online community. I would also give students real-world problems to research or "solve" throughout the semester and encourage them to collaborate with their peers (Ally, 2008). I would

provide areas in the course for discussion and peer teaching; where interactions could be

monitored so guidance is provided when necessary. Reflections would be integrated into

formative assessments, to help students develop metacognitive skills and to inform me when

students require more support (Donovan & Bransford, 2005; Kolb & Kolb, 2005). Evidence of

learning would be gathered in spaces where the community of inquiry could discuss them, and

where appropriate would be presented to the global community utilizing tools such as wikis.

  In order to articulate my philosophy of online facilitation and learning, I first explored

my beliefs about teaching and learning, informed by constructivism, connectivism and Kolb's

experiential learning cycle (Ally, 2008; Kolb & Kolb, 2005). I applied those concepts to the

online learning space, and provide examples of practice within the specific lens of the science

classroom and my role within it.

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