Constructivism: Building on What Learners Know

The word *construct* comes from the Latin prefix *com* (together) + *struere* (to pile up): to heap up together, to build or arrange. Constructivist approaches to teaching and learning are grounded in the idea that students bring valuable prior knowledge to their classes and that teachers help learners to build up that knowledge through active and personally meaningful learning activities. Teachers who embrace a constructivist approach seek ways to know students as individuals; to understand their unique ways of building, organizing, and interpreting knowledge; and to guide them toward new ways of thinking. One of the central principles of constructivism is that “individuals try to give meaning to, or construe, the perplexing maelstrom of events and ideas in which they find themselves caught up” (Candy, 1989, p. 97).

Few people are able to interpret and make sense of new professional knowledge on their own. Learning is a social process: it occurs when learners glean new insights from informed others. In online
classrooms, both teachers and peers are valuable resources in this regard. Theorists such as Lev Vygotsky (1978) use the term “social constructivism” to extend the notion of individual construction of meaning, thus acknowledging input from informed others. The notion of “scaffolding” suggests that teachers and peers can offer temporary support to other individuals during their personal processes of constructing meaning.

This chapter begins with a description of social constructivism and the underlying tenets of this approach. This is followed by an explanation of some scaffolding tactics that constructivist teachers can implement to help students develop their own ways of knowing. Although learners all construct meaning differently, these strategies offer common guidelines for helping others to build knowledge.

BACKGROUND THEORY

What Is Social Constructivism?

Constructivists view knowledge as contextual and relative, and reject the notion that knowledge is an innate commodity that can be objectified or discovered. Jean Piaget, considered one of the founders of constructivism, proposed that individuals construct new knowledge in relation to past experiences (1972). Piaget believed that knowledge develops through a process of assimilating and accommodating new ideas into the schematic frameworks or ways of knowing that already exist in an individual’s mind (1972).

A constructivist orientation to the nature of knowledge suggests that “knowledge is not discovered like gold or oil, but rather is constructed like cars or pyramids” (Novak & Gowan, 1984, p. 4). According to Novak (1993), constructivists “hold that knowledge is a construction based on previous knowledge and constantly evolving over time” (p. 169).
In education, a constructivist approach assumes that teaching is not a process of transmitting intact knowledge to learners. Constructivists do not view learners as empty vessels awaiting filling or blank slates awaiting words. Rather, learners are viewed as builders who are continually creating mental representations of events and experiences. This creation is learning.

Key principles of constructivist thinking that guide teaching and course design include connecting all learning activities to a larger goal, encouraging learner responsibility, and ensuring that required tasks reflect the complexities of practice (Savery & Duffy, 1996). Additionally, constructivist learning environments are expected to challenge learners’ thinking. In addition to supporting what students already know, constructivist teachers lead students toward reflecting deeply, thinking in new ways, and testing their ideas against alternate views (Savery & Duffy, 1996).

Constructivist learning environments are sometimes perceived as somewhat loosely defined. Learning outcomes may not initially seem easy to measure and may not be exactly the same for each learner. However, while different learners may draw diverse conclusions and have dissimilar learning outcomes, constructivist teachers must identify and redirect any misconceptions or misinterpretations that arise during knowledge construction. In other words, teachers have an overarching responsibility for steering learners toward learning activities that might be relevant to their education.

Constructivism has been criticized for its apparent willingness to accept uncritically any and all interpretations of events. In addressing this critique, Candy (1989) emphasizes that not all constructions are equally useful or valid and that education requires people to reconstruct events and ideas in ways that lead to more functional outcomes for them. Thus, a constructivist perspective can incorporate consensually validated knowledge as well as individual knowing. This point is particularly relevant to health care professional education, where achieving a recognized standard of consensually validated knowledge
is critical. There are simply some things that students in health care programs must know to be competent practitioners. For example, there is little room for creativity in taking an accurate blood pressure reading, and laboratory values have specific meaning and are not open to imaginative analysis.

While health care students must acquire certain knowledge, the process of acquiring that knowledge can be individually constructed. Given the importance of ensuring that learners are incorporating consensually validated professional knowledge, albeit in their own way and with their own subjective mental representations, it is not surprising that constructivist thinking also moves beyond the cognitive to acknowledge the profound influence that social and cultural factors can have on learning.

Understanding the “Social” in Social Constructivism

Social constructivists address the social and collaborative dimensions of learning. Building on the premise that knowledge develops in relation to past experiences, influential social constructivist theorist Lev Vygotsky (1978) emphasizes how learning is also profoundly influenced by interaction with, and help from, more knowledgeable peers. In Vygotsky’s work with children, he coined the term “zone of proximal development,” defining it as “the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (1978, p. 86). In essence, this zone encompasses the discrepancy between what learners can achieve with social support and what they can achieve independently. Constructivist teachers can help minimize this difference through including intentional socializing experiences with informed others in course design and instruction.
Social constructivists believe that both adults and children have zones of proximal development. These zones, or ranges of ability and potential, are unique to each individual. Teachers must consider certain questions when assessing each student’s particular zone of proximal development: What activities can this student do independently? What activities can this student do with assistance but not independently? And most importantly, what assistance from a teacher or peers will be most helpful in moving this student toward independence in achieving required competencies? Teachers can create this needed help through instructional scaffolding.

**Instructional Scaffolding**

Instructional scaffolding is a teaching strategy whereby instructors initially provide considerable support and foundational knowledge on a topic. Similar to scaffolds on construction sites, the support is temporary and is not expected to be required for long. As students need less help, demonstrate independence, and assume more responsibility for meeting their learning needs on their own, the support or scaffolding is gradually withdrawn.

In order to provide needed foundational knowledge efficiently, any instructional scaffolding must be carefully planned and must address areas that most students typically find difficult. Students need a clear understanding of the goals, purposes, and expected outcomes of learning activities. They need sequenced opportunities that expose them to new content, and they need frequent feedback on how their personal progress is being measured in relation to peers. These needs are usually met at the curricular level in health care education, but certain teaching techniques and tools can enhance the scaffolding that is structured into the online curriculum, including the personalizing of sequenced events, advance organizers, modelling, and student-led activities.
PERSONALIZING OF SEQUENCED EVENTS

Course outlines usually provide students and teachers with required content and assignments—an important part of the instructional scaffolding. However, constructivist teachers individualize curricular requirements and continually introduce relevant new disciplinary knowledge. Established teacher-initiated scaffolding approaches include modelling desired behaviours, offering explanations, inviting student participation, and verifying or clarifying student understandings (Hogan & Pressley, 1997).

In online learning environments, course guides offering choices of learning activities are particularly helpful instructional scaffolds. Legg, Adelman, Mueller, and Levitt suggest having students “decide to which of several discussion threads to respond, and allowing the student to find his or her own resources” (2009, p. 68). Although health care educators follow required curriculum and course guides, opportunities for building in creative support that personalizes these sequenced events and responds to learners’ evolving needs are limitless.

ADVANCE ORGANIZERS

Constructivist teachers can create scaffolds or support for new information by emphasizing what it is about an area of content that is particularly important. Knowing aspects of a topic that can be expected to be difficult or complex, educators can organize that information in ways that offer learners a way of looking at the material in advance. Most educators create and present advance organizers such as charts, diagrams, or other visual tools for organizing and representing consensually validated knowledge into their teaching practice. A summary of course content in a concise PowerPoint or Prezi presentation is another advance organizer that incorporates a graphic or visual element.
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Extending the usual teaching practice of providing general overviews or summaries of course material, theorist David Ausubel (1960, 1968) suggests that learners can come to understand ideas, concepts, and principles more deeply and more meaningfully when advance organizers include both a reminder about relevant prior knowledge and an emphasis on the relationships that exist among concepts. To this end, a learning activity that guides students to recall what they already know about a course topic is a useful advance organizer.

Mind maps and concept maps are two different kinds of graphic organizers that help learners to assimilate what they already know and what they are about to learn (Davies, 2011; Melrose, 2013). Mind maps, introduced by popular author Tony Buzan (1974), are informal intuitive diagrams used to represent a single word or idea. Mind maps, like web or spider diagrams, incorporate colours, symbols, and pictures and are often used as tools for taking notes or illustrating brainstorming activities.

By contrast, concept maps, introduced by science educators Joe Novak and Bob Gowan (1984), connect multiple words or ideas. Concept maps are hierarchical schematic diagrams that use words or symbols to represent key concepts. This tool uses linking words to show the relationship between concepts; the concept map can then be used to produce meaningful statements or propositions (Novak & Cañas, 2008). Because they illustrate the relationships, connections, and patterns among ideas, concept maps can be considered more complex advance organizers. Constructivist teachers can use advance organizers such as mind maps or concept maps both to present material to students and to evaluate how students are piecing together the new knowledge they are acquiring. When assignments invite students to synthesize what they have learned into their own advance organizers, the process of completing those assignments can encourage creativity and imagination as well as analysis.
**MODELLING**

Providing structures or templates that teachers themselves have found valuable, explaining concepts in relation to students’ practice areas, co-writing papers, and reviewing drafts of assignments before formally grading them are all valuable instructional scaffolds that can be considered modelling. Instructional scaffolding, like any worthwhile teaching activity, requires constant attention and a willingness to relate on a personal level. In order for students to benefit fully from activities available to them, they need to know that their teachers are willing to risk modelling their own ways of approaching a task. Knowing about a teacher’s in-progress projects and mistakes as well as successes can offer meaningful support and concrete examples.

Hankemeier and Van Lunen (2011) found that role-modelling can be used to promote the use of evidence-based practice with students. When teachers are willing to lead by example, they can, through demonstration, provide students with both motivation and specific knowledge acquired. The model provided by the educator becomes a structure upon which learners can construct their own way of proceeding in various real-life situations.

**STUDENT-LED ACTIVITIES**

Online classrooms can provide ideal opportunities for students to assume leadership roles with the class group. Although verbal and nonverbal contextual cues may not be as clear in online asynchronous text-based discussions or even when using synchronous technology such as conference calls (Karpova, Correia, & Baran, 2009), student-led activities in online classrooms can help generate innovative ideas and active involvement (Baran & Correia, 2009). However, the timing of these activities is critical. In the first few weeks of the course, it is critical that teachers model the kind of facilitation approaches that they expect from the students and intentionally prepare students for their leadership role. And, as Baran and Correia (2009) emphasize,
perhaps the most important role of teachers is to be active participants in the student-led activities.

Summary

As noted above, constructivist approaches to teaching and learning, and social constructivism in particular, assume that knowledge is constructed. Learners bring valuable existing knowledge to their learning experiences, and teachers are expected to build on that knowledge by providing personally meaningful activities. Knowing that learning can be profoundly influenced by informed others such as teachers and peers, constructivist educators plan for and facilitate opportunities for helpful social interaction. Throughout the learning process, instructional scaffolding, or temporary supports, are available. These scaffolds initially provide substantive foundational knowledge, offer sequenced opportunities for understanding new ideas, and are gradually withdrawn as learners construct their own ways of understanding the material. Learning activities are designed to link to students’ personal goals, connect theory to practice, and invite deep and critical reflection.

Constructivist learning environments incorporate consensually validated knowledge and professional practice standards, and competencies are comprehensively evaluated. Students’ misconceptions are identified and redirected. Learners are viewed as having a unique and individual zone of ability where they are able to complete an activity independently. Working collaboratively, students and teachers determine what assistance is needed to move toward increasing that zone of independence. Instructional scaffolding methods that support a learner’s growing independence include the personalizing of sequenced events structured into the curriculum and course outline, advance organizers such as mind maps and concept maps, modelling and sharing in-progress projects, and student-led activities.
TEACHING ACTIVITIES AND STRATEGIES CONGRUENT WITH CONSTRUCTIVIST THEORY

The following discussion expands on scaffolding tactics that constructivist teachers can readily implement in their online classes. These techniques are grounded in social constructivist thinking, involve learners in active and creative ways, and are geared toward promoting learner independence.

Creating Instructional Scaffolds

ADVANCE ORGANIZERS: MIND MAPS AND CONCEPT MAPS

Mind maps and concept maps are advance organizers that provide the kind of scaffolding or support that can assist learners in moving toward completing an activity successfully and independently. When we teach students about mind and concept maps, showing them a sketch of our thinking—a visual representation of the relationships among ideas—can be much more effective than simply explaining them verbally. Creating a mind map begins with identifying a central word or concept and then using a branching structure to expand on the concept, as illustrated in the mind map of social constructivism shown in figure 2. Colours and pictures can be included. Online tools with mapping templates are readily available for students and teachers. However, learners particularly value their teacher’s more informal visuals.

Mind maps and concept maps are different. Buzan and Buzan (2006) developed mind maps as an informal means of exploring a specific idea by brainstorming key points associated with that idea. In contrast, the concept maps of Novak and Gowan (1984), sometimes referred to as Novakian concept maps, were developed to illustrate several key concepts and the relationships among these concepts, which are specified by the use of carefully chosen linking words.
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Figure 2. Mind map of social constructivism.

Figure 3 is a concept map that Michael Zeilik, of the Department of Physics and Astronomy at the University of New Mexico, created to explain concept maps. The concepts identified in Zeilik’s map are linked in such a way that following the arrows produces a continuous statement, such as “Concept maps can be used for classroom
assessment by revealing the knowledge structure of students . . .” Without the appropriate explanatory linking words, Novakian concept maps are incomplete.

**Figure 3.** Concept map of concept maps. Source: Zeilik (n.d.). Reproduced with permission.

**CROSSWORD PUZZLES**

Crossword puzzles are excellent scaffolding tools for concrete or instrumental knowledge construction. With a sense of simplicity
and playfulness, they require learners to apply vocabulary, recall definitions, differentiate among similar terms, and spell correctly. According to blogger Kerry Jones, visual learners feel satisfied after completing puzzles, auditory learners enjoy the step-by-step reasoning, and kinesthetic learners appreciate the required multitasking (Jones, 2007). Crossword puzzles offer online health care learners opportunities to integrate the vocabulary of their discipline.

Both ready-made puzzles and programs designed to create online puzzles are widely available. An Internet search with the term “make a crossword puzzle” yields several free programs suitable for educators at all levels. Most programs require simply typing in a word and a definition. Similarly, an Internet search with the term “crossword puzzle nursing” (substitute any health care discipline) yields a selection of ready-made puzzles.

**Modelling an In-Progress Project**

Students appreciate knowing how their teachers construct meaning. Modelling in the online classroom can include activities as simple as discussing how work is progressing on a project in which the instructor is involved. In text-based discussion forums, a teacher’s experience of writing reports or papers can be shared, or a description of current work can be provided, with comments on both what is going well and what is not going well. Students usually appreciate instructors taking the risk of sharing what they have found especially difficult. Did they feel conflicted or puzzled? How did they overcome challenges and barriers? Which strategies worked better than others? It is important to note that the goal of instructional modelling is to provide personal and real examples that learners can relate to and possibly emulate. Thoughtful examples that are clearly relevant to course content currently under discussion are most useful as constructivist teaching tools.
From the Field: Modelling Through Being Visible

Carol Anderson focuses on modelling for students through ongoing purposeful communication—specifically, weekly unit introductions and summaries. This process demonstrates skills such as scholarly writing, referencing, thematic analysis, and organization. In addition to modelling, it shows students that she is actively participating in the course and is available to them. In a face-to-face setting, it would be called “being visible.”

Each week, Carol writes an introduction to that week’s unit reiterating the objectives of the module. She refers to the previous week (or weeks) in an effort to link the modules and show how they build on each other. Sometimes, Carol uses personal experiences relevant to the topic, both to inform students and to help them get to know her. In this way, she models appropriate social interaction and personal disclosure in online learning environments. In the weekly introduction, which provides a starting point to the week’s discussion, Carol often comments on the progress of assignments, reminds students of due dates, and offers help with any questions the students may have.

In a posting to the class at the end of each week, Carol summarizes some of the points that are most directly related to the objectives for the unit. In each of these summaries, she recognizes at least three students for their comments on a specific item. In so doing, she models the importance of recognizing the contributions of others in building a healthy learning
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environment. To facilitate this recognition, she keeps a private log of the students she mentions each week so that she has recognized everyone in the class individually by the end of the course. Carol sometimes adds questions or suggestions for deeper reflection or discussion to her end-of-the-week summary, role-modelling the importance of continued learning and building on existing knowledge.

Carol has received many positive comments from students on this teaching technique. One student said, “The instructor sharing some end of the week reflections demonstrated an interest and level of participation that was appreciated.” Another student noticed that Carol was role-modelling, commenting, “Carol modelled many of the strategies and concepts we discussed. Additionally, the instructor challenged the class to achieve!” Finally, a student in the course wrote, “Carol’s introductions and summaries launched things nicely and brought them back to earth again.”

Facilitating Students’ Creation of Instructional Scaffolds

STUDENT-LED SEMINARS

As emphasized earlier, student-led seminars or activities are more likely to be successful if teachers model the kind of facilitation they expect, prepare learners for leadership, and actively participate in the student-led seminars. Most online courses have a discussion component that could be facilitated by students. It is important that all students have equal opportunities to participate in the roles of both
leader and follower in course seminars. Working in pairs or small groups of three or four is optimal for leading a class of 15 to 30 in discussion. One straightforward, universal, and efficient way to prepare any group of students for leading seminars is to present Savery and Duffy’s (1996) eight principles of instructional design. Table 1, which can be used as a handout, summarizes these principles. Students can be encouraged to plan, implement, and evaluate their seminar in relation to these principles, with the instructor checking in frequently and maintaining an ongoing dialogue with the student leaders as they are preparing for their seminar. Formative evaluation at the completion of the student-led seminar can be an important element in making this activity a learning experience.

Table 1. Principles of instructional design

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<td>1.</td>
<td><strong>Anchor all activities to a larger task or problem.</strong>&lt;br&gt;The purpose of the activity and how it links to “real world” issues must be clear to learners.</td>
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<td>2.</td>
<td><strong>Support the learner in developing ownership for the overall problem or task.</strong>&lt;br&gt;Either solicit problems from learners to use as stimuli for learning activities or present a problem in a way that learners will readily adopt as their own.</td>
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<td>3.</td>
<td><strong>Design an authentic task.</strong>&lt;br&gt;An authentic task is one in which the cognitive demands are consistent with the demands of the environment for which we are preparing the learner.</td>
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<td>4.</td>
<td><strong>Design the task and the learning environment to reflect the complexity of the environment in which learners will be required to function when they have finished their program.</strong>&lt;br&gt;Rather than simplify the environment for the learner, support the complexities they will face.</td>
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5. **Give the learner ownership of the process used to develop a solution.**
   Rather than dictating a procedure or method to use, challenge the learner’s thinking about how to solve a problem.

6. **Design the learning environment to support and challenge the learner’s thinking.**
   Just as a coach or consultant might, support how learners are going about their problem-solving efforts and question their rationale.

7. **Encourage the testing of ideas against alternative views and contexts.**
   Given that knowledge is socially negotiated, ensure that alternative views are available.

8. **Provide opportunity for and support reflection on both the content learned and the learning process.**
   Keeping in mind that the goal of instruction is to develop independent learners by creating opportunities to reflect on the process of learning, or “how” learning occurred, as well as on the content, or “what” was learned.

**Source:** Adapted from Savery and Duffy (1996).

**Socratic Seminars**

One popular student-led activity involves learners presenting content relevant to a specific topic and then posing questions for their classmates to discuss. Socratic seminars extend this idea by paying particular attention to the types of questions that are posed. Students may need some assistance with creating questions that fit the Socratic method of teaching. Socratic questions challenge individuals to think deeply and critically about concepts often taken for granted.

A Socratic dialogue is fitting when student presentations to their peers involve difficult issues or ethical or moral dilemmas. Questions in Socratic seminars are expected to challenge participants to make comparisons, give evidence for cause-and-effect relationships, and provide suggestions for why an issue or practice might be realistic or
unrealistic. While “right answers” are not expected, participants must demonstrate that they are integrating content from the presentation and from their own investigations into their responses. Socratic questions draw out the beliefs of participants and challenge students to consider ideas from more than one point of view. To guide students toward crafting authentic Socratic questions for their peers to discuss, the following summary of Paul’s taxonomy of Socratic question types can be provided as a handout.

Table 2. Taxonomy of Socratic question types

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<td>1.</td>
<td>Seeking clarification.</td>
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<td>Questions that aim to elicit additional information on concepts:</td>
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<td></td>
<td>As an individual or as a professional group, how do we usually define or explain _____? What do we already know about _____?</td>
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<td>2.</td>
<td>Probing assumptions.</td>
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<td>Questions that expose the presuppositions or unquestioned beliefs that ground thinking:</td>
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<td></td>
<td>How can we verify or disprove that assumption? How did that assumption come to be part of our practice? What would happen if _____?</td>
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<td>3.</td>
<td>Probing rationale, reasons, and evidence.</td>
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<td></td>
<td>Questions that dig into rationale for arguments and uncover assumptions:</td>
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<td></td>
<td>What is the reason we do _____? Would this practice stand up in court? How might it be refuted?</td>
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<td>4.</td>
<td>Questioning viewpoints and perspectives.</td>
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<td></td>
<td>Questions that invite consideration of other equally valid points of view:</td>
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<td></td>
<td>Another way of looking at this is _____: does this seem reasonable? Who benefits most from _____? What effect would _____ have?</td>
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5. **Probing implications and consequences.**

Questions that challenge the desirability of an argument’s logical implications:

What are the consequences of _____? How do we find out _____? Can we generalize from _____ to _____?

6. **Asking questions about the question.**

Questions that reflect and extend the initial questions:

What other questions about _____ should we be asking?

**Source:** Adapted from Paul (1995) and Paul and Elder (2006).

**Lunch with the theorists**

Student-led activities online can also include role play. Melrose (2006) designed an activity inviting learners to imagine that they have an opportunity to have lunch with three theorists. As a way of presenting theoretical concepts to one another, students join a selected theorist for a virtual lunch. They begin by visualizing what it might be like to sit across the table from a theorist whose work is widely read. They consider how the theorist might explain his or her views in an informal way, what real-life guidance on immediate practice issues the theorist might offer, and instances in which this theorist’s ideas would probably not be helpful. At the conclusion of the virtual lunch, the student shares the perspectives gained with the class in a discussion forum beginning with the words “Today I had lunch with ______.” In student-led seminars, student presenters can be encouraged to tap into affective learning domains, to use humour whenever possible, and to have fun.

As variations on this activity, each student presenter in the seminar could assume the role of a theorist, offer comments on a practice issue, and respond to questions that the class group might have. Alternatively, the seminar group could present a vignette of a group
of theorists conversing over lunch. With the goal of bringing a theory to life by coming to know the person behind the theory, the presentation could be shared simply as a script. More complex presentations could be developed by acting out the roles in podcasts or videos. However, the essence of the “Lunch with the Theorists” activity is to “conceptualize well-known theorists in a familiar everyday activity and de-mystify the ideas these individuals espouse” (Melrose, 2006, p. 1). Rather than simply reiterating published explanations of a theory, this activity both personalizes the people who created the theories and reveals the immediate relevance of their ideas to current practice.

**Twitter Journal Club**

Many health care professionals are familiar with journal clubs, where a group of individuals meet face to face to exchange insights in relation to scholarly journal articles. For this activity, all members of a student group could read a particular article and then present a group summary, or individuals could each summarize a different article to help inform the group. Presentations are brief and discussion about relevance and application to practice usually follows. In clinical settings, journal clubs can help inform practitioners about current research and new ways of thinking.

In online student-led seminars, the journal club activity can be adapted to Twitter. (Twitter accounts can be created free of charge at twitter.com.) Student leaders can transfer the traditional face-to-face journal club process to an online group by distributing to classmates a brief presentation of an article and then leading a practice-related discussion using Twitter. Confining summarized journal article comments to the 140-characters maximum allowed in a tweet requires participants to sift through large volumes of information and identify priority ideas. Similarly, limiting practice-related discussion comments in this way requires succinct and precise expression of priority points.
Student leaders can be asked to establish clear directions for their online Twitter journal club. For example, a group might decide to provide the class with a link to a journal article as well as three tweets, each one summarizing a different idea emphasized in the publication. The group could then require each member of the class to respond with at least two tweets to one of the ideas, with each tweet linking the point from the article to practice and describing how the point was useful or not useful. The Twitter discussion of the selected article would be asynchronous and ongoing, but confined to a specified time period, perhaps five days.

The activity of using Twitter to discuss journal articles can be implemented in a variety of creative ways. However, as a constructivist learning activity, it must go beyond simply presenting an article and then receiving tweets from peers. Student leaders can be instructed on how to provide scaffolding by organizing the tweets into groups or general categories. As a way of closing the activity, the student and/or the instructor can identify common themes. Perhaps the majority of the class did not feel that the ideas in an article were relevant for practice. Did any of the tweets seem to influence the direction the discussion? Was there a group of tweets that opened new areas of inquiry? And finally, in the interest of inclusiveness, alternate opportunities can be created for members of the group who choose not to use Twitter so that they too can contribute their 140-character messages to the discussions.

USE A MERLOT RESOURCE IN A STUDENT-LED ACTIVITY

The Multimedia Educational Resource for Learning and Online Teaching (MERLOT) website (www.merlot.org) offers health care professionals a useful collection of free, peer-reviewed teaching and learning resources. Student leaders can use MERLOT to devise a sharing activity for seminars they are expected to lead. They might ask their classmates to browse through the health sciences section of the
website and post one resource that could be implemented in their practice. The activity could also include requiring participants to respond to at least one classmate’s posted resource. Students can be reminded of the importance of incorporating analytic discussion in both the posted resources and the responses.

**CONCLUSION**

As we have seen, constructivist thinking is a process in which learners build on what they already know by participating in active and personally relevant learning experiences. As theorist Jean Piaget (1972) asserts, constructivism is based on the notion that knowledge develops when new ideas are assimilated into the schematic frameworks or ways of knowing that already exist. Although a constructivist perspective highlights personal construction of meaning, in health care education, the approach must also incorporate consensually validated knowledge, and teachers are expected to identify and redirect any misconceptions on the part of the students.

Social constructivism acknowledges the profound impact that informed others, such as teachers and peers, can have on meaningful learning. By creating opportunities for students to engage in helpful interactions with peers, teachers offer possibilities for looking at the world in new and different ways. Theorist Lev Vygotsky (1978) believed that learners have a unique and individual zone of ability (or “zone of proximal development”). Within this zone, a learner is able to complete some activities independently but requires social support for others. As constructivist teachers seek to increase learners’ zones of independence, they invite members of the class to interact and exchange insights with one another.

Instructional scaffolding, or offering temporary support until learners are able to complete activities independently, is needed most in areas that students typically find difficult. At the curricular
level, scaffolds provide foundational disciplinary knowledge through sequenced events such as required assignments identified on course outlines. At the instructional level, scaffolds include personalizing those sequenced events and linking them to students’ individual goals. Instructional scaffolding tactics that teachers can readily implement in their online classrooms include creating advance organizers, making crossword puzzles, modelling, and establishing student-led activities. Advance organizers, such as simple mind maps that illustrate one key idea or more complex concept maps that illustrate relationships among concepts, can be used to organize consensually validated knowledge. Teachers can help students to make connections between theory and practice by modelling processes that they have found valuable, sharing their in-progress projects, and describing their mistakes. The scaffolding approach that is perhaps the most likely to generate deep and critical reflection is requiring students themselves to lead class activities. Four examples of student-led activities are leading Socratic seminars, having lunch with the theorists, organizing a Twitter journal club, and sharing a merlot resource. Constructivist approaches to teaching and learning call upon teachers to know their students. By looking at the world through students’ eyes, educators can creatively, collaboratively, and even playfully support their ways of knowing and growing.

REFERENCES


Teaching Health Professionals Online


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