In many educational contexts, people are eager to learn practical information—tips they can use to implement the next day in their teaching and learning environments. One needs only to mention the word “theory” and eyes glaze over or minds shift to next projects, shopping lists, or family responsibilities. Yet it's fundamental to human nature to make meaning out of daily experiences.

Theories, quite basically, allow us to explain processes, behaviors, or phenomena. Humans seem driven to make meaning of what they experience. But when theory is used to guide “best practice” it becomes especially helpful.

In this issue, we focus on two theories, situated cognition and cognitive load, to show how valuable they can be for understanding the work we do as teachers and learners. For theory to be useful in our daily practice as health sciences educators, we need to improve our theory literacy (Hodges & Kuper, 2012). Understanding various theories and being aware of how they play out will allow for an analysis of whether we are simply doing education by tradition or whether our practices align with appropriate theory and as such, are informed by evidence.

We hope that the content of this newsletter spurs further interest and reflection in your own thinking about education. If you have a favorite theory or stories of how theory informs your practice, we’d love to hear about it. Clearly, many directions could be taken in pursuing this topic and we anticipate it will be of ongoing interest for educators in this time of curriculum change across disciplines.

SITUATED COGNITION AND SITUATED LEARNING
by Anita Ens

While behavioural theories underlie much of health sciences education, a shift to including more sociocultural theories is evident. Common names include Vygotsky, Lave, Wenger, Rogoff, and Gee. This feature includes definitions, three examples from the literature, and some takeaways to whet your appetite.

SITUATED COGNITION
In 1988, Jean Lave published research findings which indicated that individuals solved math problems in “fundamentally different ways” (Loke et al., 2011, p. 867) according to the social goals of school versus home. Situated cognition helps to explain how both individuals’ intentions and the constraints—tools and resources—of their environment affect problem solving.

The ways in which human beings think and act are inherently coupled with their environment.

In short, “the theory of situated cognition [is a] learning theory [which] holds that the ways in which human beings think and act are inherently coupled with their environment (Brown, Collins & Duguid, 1989; Clancey, 1997 in Loke et al., 2011).”

McBee et al. (2015) expand the definition to indicate that knowledge and reasoning are “[intrinsically] shaped by the interactions that occur within this context, whether these interactions are physical, cultural or social (p. 1227).”

EXAMPLE 1 SITUATED COGNITION USED TO UNDERSTAND PHARMACY STUDENTS’ LEARNING IN TWO LEARNING CONTEXTS

In order to evaluate the clinical reasoning skills of pharmacy students learning under two conditions: case based paper and simulation, the authors undertook the qualitative study described in this article. Loke et al. chose situated cognition as an appropriate theory given its emphasis on the influence of context on cognition: presumably students would solve problems differently given the opportunities and constraints of the two learning environments. They found four areas in which student thoughts and actions were different in the two contexts: “framing of the problem; problem-solving steps and tools used; sources and meaning of feedback; and conceptualization of the patient” (p. 869). The authors did not advocate for the superiority of one condition over the other, suggesting that they would be complementary.

So what? Using situated cognition to understand thinking processes can help inform curricular choices and potentially assessment decisions as is illustrated through the description of how the authors did the same.
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EXAMPLE 2 SITUATED COGNITION USED TO UNDERSTAND RESIDENTS’ CLINICAL REASONING


McBee et al. (2015) used a qualitative design to examine the think-aloud protocols of 10 resident physicians engaged in clinical reasoning (CR). Residents watched three videos of clinical encounters with “straightforward diagnoses in internal medicine with select patient contextual factors modified” (p.1225). Transcripts of the think-alouds were iteratively coded and analyzed, with four categories emerging as contextual factors: 1. emotional reactions 2. behavioral inference 3. optimizing the doctor patient relationship and 4. difficulty with closure of the clinical encounter.

The authors suggest that context affects clinical reasoning performance of residents and find situated cognition to be a useful theory to explain this relationship. Prior theories used to understand clinical reasoning, including dual processing theory, do not adequately account for context and the dynamic interactions that happen between physician, patient, and environment during a clinical encounter.

So what? The authors suggest that situated cognition would predict contextual factors that might increase cognitive load on residents. Being aware of the evolving ability to consider a variety of CR processes in response to contextual factors can help when teaching learners CR.

Theories, by nature, are conceptual and explanatory and therefore built on layers and layers of scholarly work, research, writing, and debate. (Hodges & Kuper, p. 32)

EXAMPLE 3 SITUATED LEARNING AS EXPLICIT COMPONENT OF AN ELECTIVE CURRICULAR MODULE IN OCCUPATIONAL THERAPY


The elective module is used as an example to illustrate the potential and relevance for Social Learning theory, Situated Learning theory and the concept of Most Knowledgeable Other (MKO) to guide capacity building in scholarship and theory-based practice. Although social learning theory can be used to describe how the module was enacted, the authors gave more support for learners’ capacity building in scholarship and theory-based practice than how learning theories informed their knowledge construction.

So What? The authors offer little information about how the MKO supported student learning. In addition, the article lacked learner self reflection on the process of learning, which may have given insight to how situated learning was operative. Nonetheless, it is likely that in considering the learning theory while developing the module, the learning experience was designed explicitly to allow for the learning that happened.

SITUATED LEARNING

“Stein (1998) defines situated learning as creating an environment where adult students deal with situations within the uncertainty and complexity of the lived experience. He proposes that ‘participants will create their own knowledge out of the raw materials of experience, i.e., the relationships with other participants, the activities, the environmental cues, and the social organization that the community develops and maintains’” (Stein, 1998, in Brown et al., p. 92).
Richard Millwood, PhD, Course Director of MSc Technology and Learning at Trinity College in Dublin came up with an interactive concept map outlining major learning theories, their disciplines of origin, and links to Wikipedia for more information. Click here for the interactive site.

Millwood acknowledges that this not necessarily complete and welcomes conversation on his blog.

Theories are dynamic, evolving, and always at risk of being disproven. Engaging with theories, understanding their conceptual dimensions, and mastering the intellectual “basis of their fundamental concepts are not easy tasks.” (HODGES & KUPER, P. 32)
SPACE

As you may already know, we have moved! We are now located at S204 Medical Services Building. Some of you may remember that we previously occupied this space, so to some it feels quite familiar.

STAFFING

Along with change of space, our team membership has changed. We said farewell to Stephanie Mowat who worked as our Research and Evaluation Lead. Stephanie moved to London, ON where her husband is pursuing doctoral studies. She now works with Family Medicine at Western University. Thank you, Steph, for your work on many interesting projects with the department and all the best in your future endeavours.

We are pleased to welcome Christen Rachul as Research and Evaluation Lead. She holds a PhD in Applied Linguistics and Discourse Studies from Carleton University. The focus of her doctoral studies was on writing and genre studies with a particular interest in health and science communication. Her PhD research explored the rhetoric and discourse of Eating Well with Canada’s Food Guide. Christen has solid research and teaching experience in the areas of writing and health law and policy, among others. Her research interests include, but are in no way limited to, the role of health and medical discourses in the development of health and medical professionals’ and trainees’ identities.

Tanya Walsh Educational Specialist, will be working primarily in the area of postgraduate medical education, supporting the implementation of competency based education. Tanya is a Master of Educational Technology (UBC) candidate and spent the last three years working as Educational Specialist with the International Centre for Oral-Systemic Health at the UM College of Dentistry. We are pleased to have Tanya join our team.
Steve Yurkiw has been working as Educational Specialist with OEFD (previously Department of Medical Education) for two years. He is the liaison to the College of Rehabilitation Sciences and specializes in online learning and educational technology.

SO WHAT DID YOU DO BEFORE YOU WORKED HERE?

I worked for 16 years at Red River College. There I was immersed in the work of curriculum development which began with exploring the use of technologies in the amalgamation of two one-year certificate programs in Culinary Arts. Over time, I extended my work to Hotel & Restaurant Management, Tourism Management and Professional Baking, doing curriculum development and bringing educational technology into the various practices.

WHAT MIGHT SOMEONE BE SURPRISED TO LEARN ABOUT YOU?

I don’t know if there’s anything too surprising about me! Definitely, over the last few years I’ve rediscovered my love of the stage. I’m a performer at heart. Now as I’m getting older and I ask myself the questions: What comes next? What’s the next facet of life?, there’s been an overwhelming desire to re-establish those ties to theatre.

I’m generally type cast for positive sorts of characters, but I’ve found playing against type to be great fun. In the Fringe play “Chess” a couple of years back, I got to play the role of Walter de Courcey who was a television broadcaster/CIA operative. He would work to get his own way regardless of what it cost anyone else. I really enjoyed when I would say certain lines and there were audible gasps from the audience at my cold blooded nature. (Insert evil laugh here…)

WHAT ARE YOU CURRENTLY READING?

I’m reading The Orenda by Joseph Boyden which is a really interesting perspective on 17th Century Canada with Indigenous tribes and a French missionary who was parachuted in to try to convert this one particular tribe. It keeps bouncing between the different perspectives and how they view each other’s habits and thoughts and way of life and just how incredible misunderstandings happen between the two.

The other one is But he doesn’t know the territory by Meredith Wilson, author and composer of the musical The Music Man. It tells the story of him trying to get The Music Man mounted on Broadway. When you read it you think he must be insane to keep doing this because every time he got close, someone would pull the plug somewhere and it’s back to the beginning. But regardless of the setbacks, he just continued to find some new way to overcome them. My first high school musical was The Music Man so there’s some affinity there.

DESCRIBE SOMETHING THAT CHANGED YOUR THINKING.

I don’t know about changed my thinking, but it definitely changed my life. I got a bachelor in Education and prepared myself to be a high school history teacher. My love of history and of people made teaching a good choice. Unfortunately, at the time that I graduated, the only thing that was more common than a high school history teacher was a high school English teacher, so even though I wanted that place in the universe, the universe didn’t really have room for me at that time.

My first job was working with at-risk youth in the late 80s when youth unemployment was in the 30 something percent. Now that was life changing in itself, but the interesting thing was that the area I was hired to work in was computer managed. I’d never really seen technology as a big part of life, but here it allowed us to customize individuals’ learning paths based on what they showed us, what they were able to do. We were able to create a learning path for them that fit their needs, allowing them to experience success rather than frustration.

I saw the power that technology done well could bring to the learning equation. After that I was hooked – teaching history really became history for me at that point – and I set out on learning more about how technology can help us in our teaching and learning and it’s been a very satisfying career so far. Looking forward to more!
In our own effort to improve theory literacy, OEFD members discussed Hodges and Kuper’s (2012) article exploring the usefulness of theory for medical education in a recent journal club. The authors group the theories into three broad types: Bioscience, Learning, & Sociocultural Theories, and then they elucidate the history and practice of these theories in graduate medical education. In addition, they list educational practices that are not upheld by theory. Finally, they suggest sociocultural theories are underused, complex, and valuable for health science education.

Rather than highlighting a best theory or stirring up paradigm wars, Hodges and Kuper (2012) advocate for a “rhetorical harmony” that allows for a “plurality of ways in which [a given] construct can be understood, taught, assessed, and researched” (p. 31). The article offers a great primer for any health sciences educator as generalizations may be made to local practice.

Cognitive load theory (CLT) represents a ‘brain-based’ learning theory that focuses on the information processing activities of learning. Based on the constructs of working memory and cognitive load, this theory suggests ways to structure learning so that the brain’s processing function is focused more on learning (referred to as germane and intrinsic cognitive load) and less on extraneous load.

Especially useful for learning complex tasks, CLT fits well with the authentic learning of health professions students in the clinical setting. Van Merrienboer and Sweller (2010) suggest a number of principles that can be used in instructional design. These include minimizing extraneous load through the use of worked examples, or providing learners with a part solution to a task. Other ways to reduce extrinsic load include reducing split attention—that is, using one integrated set of notes instead of multiple sources of information. For more information check out their very practical article at Van Merrienboer & Sweller.

## UPCOMING EVENTS IN FACULTY DEVELOPMENT

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| January 11, 2017 | **ADDRESSING THE HIDDEN CURRICULUM THROUGH CURRICULAR DESIGN**
                   Anita Ens                                             | 12:00—1:00 pm | 474 Chown |
| January 25      | **A LEARNING THEORIES PRIMER: HOW PEOPLE LEARN**
                   Joanne Hamilton                                         | 12:00—1:00 pm | 474 Chown |
| February 8      | **QUESTIONING**                                          | 12:00—1:00 pm | 474 Chown |
                   Doug Brothwell                                           |            |          |

To register, click here: [https://www.cpd-umanitoba.com/faculty-development/](https://www.cpd-umanitoba.com/faculty-development/)

For assistance, contact Karen DePape at Karen.depape@umanitoba.ca