

Pedagogical Paradigms: Transformational Professional Online Learning

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Abstract: Online learning courses have been mandated for high school students in the province of Ontario, and in light of the COVID-19 situation, much of the K-12 moved to online learning opportunities. It is generally understood that the initial offering of courses did not meet the needs of the learners. In an effort to provide an alternate way forward, the Fully Online Learning Community model (FOLC) was offered through the Ontario College of Teachers (OCT) as a transitional model for designers/teachers to produce learning environments that were more suited to learners requirements. The model integrates a Problem Based Learning (PBL) orientation which is situated within a fully online environment. The project reported upon here was conducted as a 'purposeful action research' study following teams of instructional designers/teachers and OCT staffers as they undertook the design and implementation of Additional Qualification courses using the FOLC Model. In this article, data derived from posts in Knowledge Forum were analysed. Interactions with project participants showed their desire to transform their understanding of learning within fully online community contexts. However their understanding of what was required for course revision was in tension with the underlying philosophy of the FOLC model.

Introduction

Opportunities to engage in potentially transformative professional learning regarding teaching within the public domain are rare, and to have these opportunities occur within online learning spaces is even rarer. This article concerns a group of instructional designers and teachers who participated in an extensive curriculum development project. The participants were brought together as they were interested in exploring an alternative conception of online Additional Qualifications (AQ) courses, professional learning courses sanctioned by the Ontario College of Teachers, within the context of fully online learning community environments. More than 30 participants engaged in a collaborative action research project over the course of approximately six months. The project consisted of a series of workshops and course design work supported by communication in Slack and reflection in Knowledge Forum (referred to here as WebKF) in order to examine the redesign of AQ courses as the current format has generally been viewed as being ineffective for the purposes of transforming the teaching profession.

The focus of the collaborative action research project centred on the Fully Online Learning Community (FOLC) model (vanOostveen, DiGiuseppe, Barber, Blayone & Childs, 2016). Environments that are constructed around the FOLC model are conceptualized as “democratized learning communities that reduce transactional distance (Moore, 1997) between learners and educators, incorporate authentic assessment, and encourage negotiated technology affordances and cognitive outcomes while distributing responsibility for constructive criticality” (p.1). In other words, designing FOLC environments facilitates movement from teacher-directed, closed-ended spaces to those that can be characterized as student-driven and open-ended (Coomey and Stephenson, 2001). The project was initiated as a contribution to provincial capacity building in the K-12 education sector and predates the COVID-19 situation by one year. This article provides an initial report on the analysis of the data collected throughout the project with a particular focus on the data derived from the use of WebKF within the project.

Literature Review

Online learning courses (prior to the COVID-19 situation) have recently been mandated for secondary school students in the province of Ontario. However, the design, pedagogy and format of these courses have not been specified. While there are few details, it is generally understood by many practising teachers that the initial offering of these distance courses may not meet the needs of the learners. Historically, there is evidence that students learning online often feel isolated, leading to attrition rates up to 20% higher than face-to-face learning (Angelino, Williams & Natvig, 2007). The expectations and demands placed on online learners are increasing (Kizilcec & Halawa, 2015) and changes in student-centred web-based learning environments often require learners to be more independent and better problem-solvers (Dabbagh & Kitsantis, 2004). To counter this potential for social isolation in

online learning, researchers at Ontario Tech have developed a collaborative, problem-based learning FOLC model that provides the theoretical framework for this research.

FOLC Model

The FOLC model is a direct response to the limitations of distance learning, MOOCs and realist epistemologies (van Oostveen, DiGiuseppe, Barber, Blayone, & Childs, 2016). The FOLC model embraces the constructivist notion that reality, including virtual reality, is something that is created, rather than discovered (Johnson, 2014), and it incorporates the idea that communities are dynamic (not static) “co-creations.” Focused on facilitating the development of critical thinking, problem-solving, communication, creativity and collaboration skills in current online environments, the FOLC model also focusses on the development of 4th Industrial Revolution competencies desired by (international and local) economic and government organizations such as the World Economic Forum (2016), the Conference Board of Canada (2016) and the Ontario Ministry of Advanced Education and Skills Development (2016). Importantly, FOLC’s activity, control and community orientations are also consistent with Human Rights Education (Tibbitts, 2005; Tibbitts & Kirchschaeger, 2010); Social Justice Education (Grant & Gibson, 2013); and other forms of transformative, emancipatory, and socially-engaged learning. Several specific conditions fostering transformative learning identified by Taylor (2007, 2008, 2016), and strongly aligned with FOLC, include:

- An environment that promotes a sense of safety, openness, and trust, encouraging the sharing of emotions as preparation for critical reflection.
- Activities that facilitate the exploration of divergent perspectives, problem-solving, and critical thinking.
- A community that promotes each member’s sense of autonomy, engagement, and collaboration.
- The use of feedback, self-assessment, and self-dialogue that are used to assist the process of transformative learning.

While the FOLC is a derivative of the Community of Inquiry or COI model, there are some significant differences. The FOLC incorporates Social (SP) and Cognitive Presence (CP). It subsumes Teacher Presence (TP) fully within the other presences. This move, rooted in a democratized approach to learning, places greater emphasis on the community and the nurturing of learner empowerment and social engagement. Secondly, FOLC introduces the “digital space” as a dynamic, negotiated, co-constructed contextual construct with the potential to extend the scope and amplify the richness of SP and CP. Thirdly, FOLC is conceptually inclusive, explicitly incorporating several subsidiary models, which address additional “layers” of the learning experience (e.g., learning activities and goals, digital devices and competencies, responsibility and control, community formation and assessment). To date, in the originating context of UOIT, the following sub-models have been used to enrich and adapt FOLC in specific contexts of practice and research:

- Problem and inquiry-based learning (Savin-Baden, 2000, 2007)
- General Technology Competency and Use (Desjardins, 2005; Desjardins, Lacasse, & Belair, 2001; Desjardins & van Oostveen, 2015)
- Teaching Learning Paradigm (Coomey & Stephenson, 2001; Layne & Ice, 2014)
- Community of Practice (Lave, 1991; Wenger, 1998; Wenger & Snyder, 2000)
- Transactional Distance (Moore, 1993)

Social Presence

Within CoI research, SP was conceptualized and empirically explored through discourse analysis of asynchronous (text-based) discussion transcripts. This methodology demonstrated the ability of text-based computer conferencing to support "affective interpersonal interactions," a sense of immediacy and group cohesiveness (Rourke, Anderson, Garrison, & Archer, 1999). SP was defined originally as “the ability of learners to project themselves socially and emotionally in a community of inquiry” (Rourke et al., 1999) or as “real people” (with their full personality) through digital technology (Garrison et al., 2000). Subsequent research triggered a redefinition of SP as “the ability of participants to identify with the group or course of study, communicate purposefully in a trusting environment, and develop personal and affective relationships progressively by way of projecting their individual personalities” (p. 34).

The synergistic dimensions of the Fully Online Learning Community (FOLC) model are conceptualized as Social Presence (SP) and Cognitive Presence (CP) occurring primarily within a Digital Space comprised of community-selected, asynchronous and synchronous affordances. Successful Collaborative Learning occurs at the intersection of these dimensions as the learners develop their sense of community, and requisite digital competencies are applied to support critical inquiry. Recognizing that not all social and cognitive interactions are digitally mediated, even in fully online courses/programs, FOLC may be adapted to hybrid-learning environments by

strategically resizing/repositioning the Digital Space in relation to SP and CP shifts emphasis from interpersonal relationships to the creation of a cohesive learning community.

The FOLC model finds conceptual alignment with the current CoI definition of SP. At the same time, the issue of whether learners in an online environment are perceived as “real”—based on the work of Gunawardena (1995)—continues to inform FOLC’s conceptualization and empirical exploration of SP (van Oostveen, Childs, Clarkson, & Flynn, 2015) because this perception is thought to influence the quality of relationships in a learning community.

The FOLC model focuses the attention of the community toward the building of relationships and the degree to which these environments can be personalized (Hod, Bielaczyc & Ben-Zvi, 2018) so that skills and competencies such as critical thinking can be “developed through becoming part of a community that appreciates and values critical thinking” (Trninic, Swanson & Kapur, 2018).

Cognitive Presence

In the FOLC model, cognitive presence is envisioned as a “thoughtful, reflective and analytic” (Dannels, 2016) process that directs the quality and quantity of critical thinking, collaborative problem-solving, and construction of meaning that occurs during community member interactions. Cognitive presence reflects the quality and quantity of critical thinking, collaborative problem-solving, and construction of meaning occurring in community member interactions. It is based on the iterative relationship between personal understanding and shared dialogue (Garrison & Cleveland-Innes, 2005).

FOLC recognizes the merits of Dewey’s model of Practical Inquiry (Dewey, 1933), particularly the focus on rigorous inquiry, and the responsibility of every learner to transform potentially useful ideas into socially contestable knowledge. However, FOLC is more flexible than this earlier model regarding what specific sub-models a particular learning community may wish to incorporate. To date, FOLC learning communities have incorporated: (a) Popper’s Three Worlds model, which creates a conceptual space (“World Three”) for publically contestable knowledge artefacts; (b) the constructivism-informed Science & Technology Education framework (Bencze, 2008); Problem-based Learning models and accompanying Problem-based Learning Objects (PBLOs) emphasizing the analysis of contexts rather than teacher-defined problems (vanOostveen, Desjardins & Bullock, 2018), and other socio-constructivist approaches, such as Knowledge Building (Scardamalia, 2002; Cacciamani, Cesareni, Martini, Ferrini & Fujita, 2012).

Digital Space

The CoI model views digital technologies and competencies as extraneous to the core model. It was thought that to include the digital context as a dimension would make the CoI model unreasonably complex. The FOLC model resists this reduction, conceptualizing the digital space as a key sub-context for immersive online learning. According to FOLC, SP and CP cannot be fully conceptualized without considering the mediating influences of the digital space (Blayone, vanOostveen, Barber, DiGiuseppe & Childs, 2016).

In FOLC learning environments, digital spaces are co-created by all members of a learning community. Typically, the learner/designer initially begins to define the space by posting videos (constructed as PBLOs) to YouTube and providing facilitated tutorial sessions in a browser-based, audio-video conferencing suite. Subsequently, when working collaboratively in small groups, Open Educational Resources (OER) and other web-based applications are chosen by the learners according to two specific principles: (a) resources used must be shareable, and (b) the URL for the site(s) must be provided to everyone in the learning community. The tools and applications selected incorporate a mixture of synchronous and asynchronous environments (including creative synchronous/asynchronous merging), allowing for greater clarity and effectiveness of the interactions than can be achieved using asynchronous technologies alone (Trevino, Lengel, & Daft, 1987; Rockinson-Szapkiw & Wendt, 2015).

In particular, the use of a browser-based audio-video conferencing tool, in which each individual is represented by a “real-time” (web-cam-generated) image, and by audio interactions through a microphone headset, provides a strong semblance of face-to-face interactions which allow participants to “present themselves to others as real people” (Garrison et al., 2000). The use of visual cues, such as facial expressions and body language; audio cues from direct speech; and the incorporation of text-based backchannels allow for the promotion of SP, community, and ultimately, collaborative learning (Rockinson-Szapkiw & Wendt, 2015).

Importantly, FOLC’s digital space is an oftentimes unpredictable context for online learning. It is not a neutral space but rather a space inhabited by applications and platforms that shape interactions. Even platforms such as Facebook or LinkedIn may be chosen by learners owing to their level of comfort using the application. However, the discussion functionality was not designed for sustained collaborative inquiry, and therefore, limits are placed on

CP. In a FOLC environment, this situation becomes a learning experience rather than a situation to be avoided (Blayone, vanOostveen, Barber, DiGiuseppe & Childs, 2016).

Action Research

Carr and Kemmis (1986) agree that teachers are severely limited in the autonomy that they possess. “Teachers operate within hierarchically arranged institutions and the part they play in making decisions about such things as overall educational policy, the selection and training of new members, accountability procedures, and the general structure of the organizations in which they work is negligible” (p. 39). In order to make teaching a more professional activity, teachers must take advantage of existing opportunities to participate much more widely in the decision-making process. The challenge becomes one of attempting to engage teachers in authentic teacher professional learning which reflects the characteristics noted above. In the estimation of these authors, the most effective way of achieving this would be to have teachers virtually meet in small groups where they could interact with each other and the established knowledge base, discussing what theory would be most appropriate to their given situations. They need to be given opportunities to construct plans, to try some strategies out in their virtual classrooms, reflect on those experiences and then come back to the group and critique what happened. The teachers should take their reflections, the criticisms and ideas of their colleagues, and make new plans that they can take back into their virtual classrooms for another cycle of action. This is, in short, action research. These were the processes in which the AQ course designers were engaged during this research project.

The research questions that the research team was interested in pursuing were:

1. How does the structure of social presence within the community adapt as a consequence of disruptions that are inherent in FOLC environments?
2. Posing the FOLC as a grand conjecture, can we elicit refutations to the model through the development process - bridging the theory to practice and investigating the nature of praxis within FOLC contexts? How does the act of implementing the FOLC create modifications to participants about the FOLC?
3. How do the elements within the FOLC design process facilitate or provide opportunities for cognitive growth and a pedagogical paradigm shift towards learner-centered, open-ended digital environments?
4. How has participant thought regarding the concept of FOLC readiness been modified through your involvement in the design and implementation of your AQ course?
5. How has the way participants define online communities and the associated roles and structures impacted the way you view AQ course design?

Methodology

The Fully Online Learning Community Model (FOLC) was shared with the AQ designers in conjunction with the Ontario College of Teachers (OCT) in a face to face half-day workshop on site at the OCT in Toronto, Canada. A series of 7 additional fully online workshops were made accessible to the AQ designers. The methodology of the project reported here was conducted as a 'purposeful action research' study following teams of instructional designers/teachers and OCT staffers as they undertook the design and implementation of Additional Qualification courses using the FOLC Model. By "purposeful action research" (vanOostveen, 2005), an intentional approach connecting teachers to external influences that can shape their process was adopted. Data sources included recordings from the series of audio/video conference workshop sessions, Knowledge Forum reflective posts and Slack messages, the results of the Digital Competency Profiler (DCP), a digital competency and usage toolset, at the beginning/end of the project, and a series of semi-structured interviews throughout the project. Knowledge Forum was used for its affordances in support of participant metacognition, while Slack was used for general communication and file sharing. Participants voluntarily participated in all aspects of the project and as a consequence some of the components were much better attended to than others, resulting in a richer data set. The research team is in the process of analysing all of the data and then assembling the comprehensive views of the participants as they went through the process of assembling their AQ courses.

This article focuses solely on a preliminary partial analysis of the WebKF posts. Several researchers from the team read through all of the posts, following the threads. This amounted to a chronological reading of the posts. Good use was made of the Timemachine assessment tool. A thematic analysis was carried out (Glaser & Strauss, 1967), specifically to investigate any cross-correlational conversations between individuals within the community. The resulting themes are reported and discussed in the following section.

Results and Discussion

From the Knowledge Forum Activity Dashboard, there were 106 posts created, 250 modified posts and a total of 1353 reads. This activity was inclusive of posts added by the research team, by the 16 participants who volunteered to work in the WebKF environment. The majority of posts coincided with the workshops that were offered from April through to June 2019. There was another spike of activity occurring through July 2019.

In order to examine the full-learning experience of the participants, results will be subdivided into each of the modules in WebKF and presented in chronological order of when each module was released to the participants. At the end of each module discussion a quote is provided that exemplifies the findings on WebKF.

Welcome/Digital Competencies and Learning in FOLC Environments View

Participants suggested that they had some background in technology, although some mentioned the struggle using technology is still on-going. Most participants commented on the emotionality of using technology, both for themselves and how a facilitator in a digital environment must feel. Although they see the potential of FOLC, they seem to focus on the negatives of using technology (specifically in regards to technology failure). It should be noted specifically that the feelings participants were expressing seemed to be a reflection by participants of their own lack of confidence in using the technology for educational purposes, rather than a reflection of the actual usefulness of working within a co-constructed digital environment. Despite this dissonance between the benefits/detriments of using technology for educational purposes and their own personal feelings, they wanted to improve their own digital competencies and were excited by the possibilities that FOLC presented.

As someone who is not digitally competent, my initial scan of the [technology] article reinforced my apprehension (e.g., print heavy, acronyms, assumption of technical terms, [an] assumption I would not understand). There was an emotional response rooted in my lack of confidence in this area. I pushed through this... I found myself connecting to the dimensions of learning that are possible in Knowledge Forum... This is what hooked me and helped me get past the technology requirements... (Participant 1, 3/26/2019, 3:29:13 PM)

Using Authentic Assessment in FOLC Environments View

In this module, participants discussing authentic assessment pointed out that different personal preferences for kind activities should be used for differing personalities of learners, and that FOLC could play to catering to these differing preferences. There was also discussion on assessment as learning (formative assessment), and how in the FOLC it should be used for demonstrating learning and showing the growth of the learner, and thereby providing support to the learner. Participants expressed disdain for achievement charts, and emphasised the importance of students using self-assessment and reflection, although there was no elaboration on how to do this necessarily in an actual classroom. Finally, there was some discussion on how to make authentic tasks authentic to learners, or to curriculum, which there was some relation back to self-reflection and the idea that one can't be authentic without self-reflection.

... There has been mention of the importance of including students in the creation of both learning and assessment tasks; I believe they are one and the same. The process of reflection should be inherent in any task, and through that reflection, there should be the opportunity to demonstrate insight and learning in whatever form is uniquely available to the student... (Participant 2, 3/31/2019, 12:24:50 AM).

... I know what I have learned and I think self-assessment is an authentic gauge of learning....more so than getting a grade. Opportunities for self-assessment are integral to authentic tasks and authentic assessment (Participant 3, 4/2/2019, 5:28:34 PM).

PBLO Use in FOLC Environments View

Participants described that the FOLC model seems to create co-inquiry opportunities between students and teachers when in class, meaning that both assume responsibility for learning. FOLC was mentioned as seeming to be a balancing act between freedom, responsibility and meaning gained from a course, and that the integration of PBL is a "total approach to education" by presenting real challenges to learners.

... PBL is a total approach to education. And there is a PBL process, which, among other things, replicates the commonly used systematic approach to resolving problems or meeting challenges. Students assume the responsibility for learning and teachers become facilitators: stimulating and guiding students' in their problem solving and self-directed learning... (Participant 4, 4/8/2019, 2:51:16 PM).

Facilitation of Learning in FOLC Environments View

Participants here shared their thoughts on the role of facilitation on learning within the FOLC environment. The following are descriptors that participants used to describe what they felt that a facilitator in a FOLC would embody: powerful, influencer, co-inquirer, co-facilitator, critical pedagogue, comfortable with technology, curator, knowledge mobilizer. Most of the posts in this section described how a facilitator would be or act like, but again there were no practical implementation suggestions provided.

An online facilitator in an FOLC AQ course: is comfortable with using technology and open to learning new tools as they are presented, plans for dissonance and expects periods of silence, doesn't settle for one voice, one point of view, asks questions when questions are asked, loves learning/inquiry and will engage others in exploration, is experienced in the practice of teaching, is passionate about the content/topic/subject, is caring and kind to others; is authentic, makes decisions based on the needs, interests of the collective and shares the decision making role with the collective, provides and promotes feedback and reflection, recognizes connections and enables others to make their own, believes in fully online learning (Participant 5, 4/9/2019, 5:57:35 PM).

Designing the Digital Environment View

In this module, none of the participants made any comment or post. Although there is no data to present, the lack of data and participation could be for several reasons. Based on previous comments from participants, the most likely reason is that the participants still treat technology as a means to an end, instead of an end in themselves. They most likely do not see technology as something as being a part of an environment, or an environment itself, but a concrete object that acts as a conduit for their teaching. As with some of the discussion with the first module *Welcome/Digital Competencies and Learning in FOLC Environments*, this could also be an indicator that the participants might not perceive the usefulness of working within a co-constructed digital environment.

Designing and Building your AQ Course View

For this final module, much of the discussion seems to have stemmed from two participants. In these conversations, participants were wanting to create a sense of belonging and a community of learning in AQ courses. However, participants expressed the possible tension between the community and freedom of the individual, and what this meant for their AQ courses. Finally, there was some discussion on making the instructor “invisible”, in the sense that the role of the instructor should be one of a facilitator and that the learning community as a whole should have shared ownership of each other's learning. In the end, participants expressed more questions than in any other module which suggested that they wanted to learn more about FOLC and how to implement it in their own AQ courses.

as an AQ facilitator and co-learner, how will I foster a sense of belonging to this community of learning? as a community of learning, how will we share responsibility and ownership? how will the collective identity of the community support freedom, shared power, flexibility and innovation? what processes and interactions will enable and sustain authentic relationships throughout the course? how do we come to know, trust and respect members of our learning community (Participant 5, 4/29/2019, 10:51:36 AM)?

Are you aiming to be invisible as an instructor or that the role of the instructor is invisible because everyone in the learning community has shared ownership? Working with colleagues, I found taking that active learner stance alongside candidates was huge for a successful course... (Participant 6, 5/14/2019, 11:36:06 AM).

Conclusions

Interactions with project participants showed that their desire to transform their understanding of learning within fully online community contexts was in tension with their perception of the parameters for course revision, which were inconsistent with the underlying premise of the FOLC model. The authors and participants found that learning occurred not in spite of, but as a result of, socially constructed disruptive dialogue, reflection, and collaborative group processes. Further analysis will be carried out on the various data sources and further implications of this work will be reported in upcoming conferences and journal articles.

References

- Angelino, L. M., & Natvig, D. (2009). A conceptual model for engagement of the online learner. *Journal of Educators Online*, 6(1), n1.
- Bencze, J.L. (2008). Science & Technology Learning Cycles: Teaching & learning based on constructivist learning principles. Retrieved from http://webspaces.oise.utoronto.ca/~benczela/Constructivist_SandTed.html#ConstructivistEd_Model
- Blayone, T., vanOostveen, R., Barber, W., DiGiuseppe, M. & Childs, E. (2016). Developing learning communities in fully online spaces: Positioning the Fully Online Learning Community model. In *Proceedings of the Second International Symposium on Higher Education in Transformation*, November 2-4, 2016, Oshawa, Ontario, Canada. Retrieved from https://www.researchgate.net/publication/312087765_Developing_Learning_Communities_in_Fully_Online_Spaces_Positioning_the_Fully_Online_Learning_Community_Model
- Blayone, T.J.B., vanOostveen, R., Barber, W., DiGiuseppe, M., & Childs, E. (2017). Democratizing digital learning: theorizing the fully online learning community model *International Journal of Educational Technology in Higher Education*, 14(1), 1-16.
- Cacciamania, S., Cesareni, D., Martini, F., Ferrinic, T., & Fujita, N. (2012). Influence of participation, facilitator styles, and metacognitive reflection on knowledge building in online university courses. *Computer & Education*, 58(3), 874-884.
- Carr, W. & Kemmis, S. (1986). *Becoming critical: Education, knowledge and action research*. Lewes: Falmer Press.
- Conference Board of Canada (2016). *Employability Skills 2000+*. Retrieved from <http://www.conferenceboard.ca/topics/education/learning-tools/employability-skills.aspx>
- Coomey, M. & Stephenson, J. (2001). Online learning: it is all about dialogue, involvement, support and control - according to the research. In Stephenson, J. (Ed.). *Teaching & Learning Online: Pedagogies for New Technologies*. Routledge, 37-52.
- Dabbagh, N., & Kitsantas, A. (2004). Supporting self-regulation in student-centered web-based learning environments. *International Journal on E-Learning*, 3(1), 40-47.
- Dannels, D.P. (2016). Opening lines: scholarly inquiry and learning outcomes in communication, *Communication Education*, 65:4, 480-483, DOI:10.1080/03634523.2016.1208260
- Desjardins, F. J. (2005). Information and communication technology in education: A competency profile of francophone secondary school teachers in Ontario. *Canadian Journal of Learning and Technology/La revue canadienne de l'apprentissage et de la technologie*, 31(1), 1-14.
- Desjardins, F. J., Lacasse, R., & Belair, L. M. (2001). Toward a definition of four orders of competency for the use of information and communication technology (ICT) in education. Paper presented at the Computers and Advanced Technology in Education, Banff, Canada.
- Desjardins, F. J. & vanOostveen, R. (2015). Faculty and student use of digital technology in a "laptop" university. Paper presented at the Ed-Media 2015 World Conference on Educational Media and Technology, June 22-25, 2015, Montreal, Quebec, Canada.
- Dewey, J. (1933). *How we think: A restatement of the relation of reflective thinking to the educative process*. Boston: D.C. Heath.
- Garrison, D. R., & Cleveland-Innes, M. (2005). Facilitating cognitive presence in online learning: Interaction is not enough. *American Journal of Distance Education* 19(3), 133-148.
- Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, 2(2), 87-105. doi:10.1016/s1096-7516(00)00016-6
- Glaser, B.G. & Strauss, A. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago, IL: Aldine.
- Grant, C. A., & Gibson, M. L. (2013). "The path of social justice": A human rights history of social justice education. *Equity & Excellence in Education*, 46(1), 81-99. doi:10.1080/10665684.2012.750190
- Gunawardena, C. N. (1995). Social presence theory and implications for interaction and collaborative learning in computer conferences. *International Journal of Educational Telecommunications*, 1(2/3), 147-166.
- Hod, Bielaczyc & Ben-Zvi (2018). Revisiting learning communities: innovations in theory and practice. *Instructional Science*, 46(4), 489-506.
- Johnson, P.A. (2014). *Constructivism - A Short Story*. Retrieved from <http://wordpress.uark.edu/tfsc/files/2014/09/Constructivism.pdf>
- Kizilcec, R.F., & Halawa, S. (2015). Attrition and achievement gaps in online learning. *Proceedings of the Second (2015) ACM Conference on Learning*, 57 – 66.

- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. New York: Cambridge University Press.
- Layne, M., & Ice, P. (2014). Merging the best of both worlds: Introducing CoI-TLP model. In B. Sutton & A. Basiel (Eds.), *Teaching and learning online: New models of learning for a connected world* (Vol. 2, pp. 3-20). New York: Routledge.
- Moore, M. (1997). Theory of transactional distance. In Keegan, D. (Ed.). *Theoretical Principles of Distance Education*, Routledge, 22-38.
- Ontario Ministry of Training, Colleges and Universities (2016). *Essential Employability Skills*. Retrieved from <http://www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/essential.html>
- Rockinson-Szapkiw, A., & Wendt, J. (2015). Technologies that assist in online group work: A comparison of synchronous and asynchronous computer mediated communication technologies on students' learning and community. *Journal of Educational Multimedia and Hypermedia*, 24(3), 263-279.
- Rourke, L., Anderson, T., Garrison, D. R., & Archer, W. (1999). Assessing social presence in asynchronous text-based computer conferencing. *Journal of Distance Education*, 14(2), 50-71.
- Savin-Baden, M. (2007) "Challenging models and perspectives of problem-based learning." In De Graaff, E. & Kolmos, A. (Eds.) *Management of change: Implementation of problem-based and project-based learning in engineering* (pp. 9-30). Rotterdam, The Netherlands: Sense Publishing.
- Scardamalia (2002). Collective cognitive responsibility for the advancement of knowledge. *Psychology*
- Taylor, E. W. (2007). An update of transformative learning theory: A critical review of the empirical research (1999–2005). *International Journal of Lifelong Education*, 26(2), 173-191. doi:10.1080/02601370701219475
- Taylor, E. W. (2008). Transformative learning theory. *New directions for adult and continuing education*, (119), 5-15.
- Taylor, E. W. (2016). Teacher transformation: a transformative learning perspective. *Italian Journal of Educational Research* (15), 17-26.
- Tibbitts, F. (2005). Transformative learning and human rights education: Taking a closer look. *Intercultural Education*, 16(2), 107-113. doi: 10.1080/14675980500133465
- Tibbitts, F., & Kirchsclaeger, P. G. (2010). Perspectives of research on human rights education. *Journal of Human Rights Education*, 2(1), 8-29.
- Trevino, L. K., Lengel, R. H., & Daft, R. L. (1987). Media symbolism, media richness, and media choice in organizations a symbolic interactionist perspective. *Communication Research*, 14(5), 553-574. doi: 10.1177/009365087014005006
- Trinic, Swanson & Kapur (2018). Productive dissent in learning communities. *Instructional Science*, 46(4), 621-625.
- vanOostveen, R. (2005). *Using Action Research for Teacher Professional Development: Research in Science and Technology Education*. [Unpublished doctoral dissertation]. Ontario Institute for Studies in Education/University of Toronto.
- vanOostveen, R., Childs, E., Clarkson, J. & Flynn, K. (2015). Becoming close with others online: Distributed community building in online PBL courses. Paper presented at EdMedia 2015 World Conference on Educational Media and Technology, June 22-25, 2015, Montreal, Quebec, Canada.
- vanOostveen, R., DiGiuseppe, M., Barber, W., Blayone, T. & Childs, E. (2016). New conceptions for digital technology sandboxes: Developing a Fully Online Learning Communities (FOLC) model. In *Proceedings of EdMedia: World Conference on Educational Media and Technology 2016* (672-680). Association for the Advancement of Computing in Education (AACE), June 29, 2016, Vancouver, B.C. Retrieved from <https://www.learntechlib.org/primary/p/173015/>
- vanOostveen, R., Desjardins, F. & Bullock, S. (2018). Professional Development Learning Environments (PDLEs) embedded in a Collaborative Online Learning Environment (COLE): Moving towards a new conception of online professional learning. *Education and Information Technologies*, 24(2), 1863-1900. Retrieved from <https://doi.org/10.1007/s10639-018-9686-6>
- Wenger, E. (1998). Communities of practice: Learning as a social system. *Systems Thinker*, 9(5), 2-3.
- Wenger, E. C., & Snyder, W. M. (2000). Communities of practice: The organizational frontier. *Harvard Business Review*, 78(1), 139-146.
- World Economic Forum (2016). *The 10 skills you need to thrive in the Fourth Industrial Revolution*. Retrieved from <http://www.weforum.org/agenda/2016/01/the-10-skills-you-need-to-thrive-in-thefourth-industrial-revolution>