

2015

# Technology in Transformative Learning Environments

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# Transformative Curriculum Design in Health Sciences Education

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A volume in the Advances in Higher Education and Professional Development (AHEPD) Book Series

Medical Information Science Reference
An Imprint of IGI Global

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Published in the United States of America by
Medical Information Science Reference (an imprint of IGI Global)
701 E. Chocolate Avenue
Hershey PA 17033
Tel: 717-533-8845
Fax: 717-533-8661
E-mail: cust@igi-global.com
Web site: http://www.igi-global.com



Library of Congress Cataloging-in-Publication Data

Transformative curriculum design in health sciences education / Colleen Halupa, editor.
pages cm
Includes bibliographical references and index.
Summary: "This book provides information for faculty to learn how to translate technical competencies in medicine and healthcare into the development of both traditional and online learning environments"-- Provided by publisher.
ISBN 978-1-4666-8571-0 (hardcover) -- ISBN 978-1-4666-8572-7 (ebook) 1. Medical education. 2. Medical education--Technological innovations. 3. Curriculum planning. 4. Medicine--Study and teaching (Continuing education) I. Halupa, Colleen.

R735.T73 2015
610.71--dc23

2015012038

This book is published in the IGI Global book series Advances in Higher Education and Professional Development (AHEPD) (ISSN: 2327-6983; eISSN: 2327-6991)

British Cataloguing in Publication Data
A Cataloguing in Publication record for this book is available from the British Library.

# Chapter 4
# Technology in Transformative Learning Environments

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## ABSTRACT

*Health science educators are increasingly bombarded with proposals to integrate instructional technology into the curriculum to enhance learning. While it may be that providing more options for delivering instruction in different formats provide instructional benefit for educators, the unique nature and goals of health science education require a systematic and integrative approach when instructional technology is introduced into the curriculum. Providing support for transformative learning pedagogies and high-level learning that assists students in developing a reflective professional identity should be a major goal of instructional technology adoption. This chapter develops a framework that health care educators can use to guide the integration of instructional technology in a manner that provides instructional affordances for transformative learning and supports instruction that produces reflective practitioners.*

## INTRODUCTION

*Creating the conditions for and the skills of effective adult reasoning and the disposition for transformative learning-including critical reflection and dialectical discourse-is the essence of adult education and defines the role of adult educator. – Jack Mezirow (2009 p. 22)*

DOI: 10.4018/978-1-4666-8571-0.ch004

Education for the professions and health science education more specifically requires a unique perspective and approach. Various authors have pointed out the unique nature of educating for practice demands an integrative pedagogy. This pedagogy presents knowledge, technical skills and ethical, patient-centered practices in ways that help students become reflective practitioners. Benner (1984), Benner and Sutphen (2007) and Benner, Sutphen, Leonard and Day (2010) have called for health science education that focuses on the following:

- Contextualization;
- Authentic learning experiences;
- Multiple ways to think;
- Formation of professional identity.

Teaching knowledge and skills separately or in a decontextualized manner produces fragmented educational experiences. Students should be taught in an environment where knowledge and thinking are acted upon and applied in a particular context. Faculty members must provide linkages between the professional knowledge and the use of that knowledge in the practice setting.

Authentic learning assessment should occur as often as possible in the classroom. In some cases, even clinical teaching situations do not approximate the dynamic clinical setting and many assessments focus in on fine-grained or elementary competencies. Students need instruction and assessment in clinical settings encompassing a diverse set of patient care situations

Students must learn how to analyze and evaluate scenarios and situations. A singular focus on teaching scientific and critical thinking skills needs to be augmented with other ways of thinking, such as the ability to reason through the trajectory of a patient's developing situation. In addition, students must be able to integrate patient needs with their own life experience. Educators must also facilitate the formation of a professional identify which supports reflective practice

The practice of health science, with its combination of knowledge, cognitive and hands-on skills, has a unique transformative nature that requires a unique pedagogical approach. As a number of health educators such as Benner (1984), Noone (2009) and Berragan (2013) have pointed out, health professions require education for practice. Curricula and instruction must be designed to deliver professional education in a contextualized fashion that links knowledge, skills and ethical and reflective practice behavior.

One unique perspective on learning is Jack Mezirow's transformative learning theory, which has been developed over the last several decades. His theory is specific to adult learners and focuses on learning mechanisms involved in creating perspective change or what has also been called a change in frames of reference.

Transformative learning requires an ability to reflect on interactions with others in critical discourse as well as the ability to self-reflect. The goal of transformative learning is to produce more adaptive and efficient frames of reference that allow for engagement in reflective thinking. The unique focus on both mental and educational processes that enhance the ability to reflect and engage in productive discourse make transformative learning theory particularly relevant to health sciences education.

## TRANSFORMATIVE LEARNING

Increasing calls to educate health science students to be reflective practitioners have led to the exploration of a number of theories and pedagogies. Transformative learning theory with its emphasis on changing and adapting frames of reference through critical discourse and critical reflection on content and personal assumptions holds significant relevance to the development of reflective practitioners. Explorations of transformative learning theory in the health sciences have focused primarily on the mechanisms posited by Mezirow to lead to changes in frames of reference or meaning schemes. Transformative learning events as described by Mezirow (1992) are those that cause students to undergo a shift in the way they think and act.

Faulk and Morris (2012, p.17) outlined the core transformative learning approaches:

- **Critical Reflection:** The process an individual uses to learn. Critical reflection involves pondering new concepts.
- **Critical Self-Reflection:** The process of questioning personal values, beliefs and assumptions.
- **Critical Dialogue:** The process whereby an individual considers new concepts, how these concepts fits within the personal point of view, and what revisions to personal assumptions, beliefs, or values may be indicated compared to other points of view.

Fetherston and Kelly (2007) provide some guidance on the teaching of transformative education and outlined some assumptions regarding transformative learning:

- Transformative learning involves profound shifts in our understanding of knowledge, the world, and ourselves.
- Reflection is key to the achievement of transformation.
- Transformation is a process precipitated by experience(s) or information that disrupt current understanding.
- Teaching for transformation involves creating spaces for critical engagement and dialogue.

Building on the work of Terry and Faulk (2010) and Cranton (2010), this chapter aims to establish how technology can be used to create transformative learning environments that foster critical discourse as well as critical and self-critical reflection. Although instructional technology can provide affordances that support transformative learning and the type of high-level learning described by Mezirow and others, it can only do so if combined with theory-based pedagogy and integrated into the contexts of health sciences education. Teaching for reflective practice is not best done merely by exposing students to isolated uses of technology such as stand-alone online discussions, blogs or portfolios. Rather, instructional technology can only be truly effective as a tool for transformative learning in the health sciences if it is integrated and not viewed as a separate entity. Two major questions are outlined below:

- What factors are critical in an instructional system that supports the production of reflective practitioners through transformative learning affordances?
- How must instructional technology be incorporated into the health science curriculum to help produce transformative learning experiences?

There are no easy answers, but technology can be used to enhance learning in multiple ways without becoming the focus of the educational process.

## TECHNOLOGY-ASSISTED TRANSFORMATIVE LEARNING ENVIRONMENTS

Health science educators are increasingly bombarded with proposals to integrate instructional technology into the curriculum to enhance learning. Massively open, online courses (MOOCs), flipped classrooms, where video-taped lecture content is viewed online and classroom time is used for discussions and group activities, simulations, learning management systems and other applications are all promoted as methods for improving learning and the delivery of instruction. While it is true that many of these technologies may provide more flexible techniques for delivering instruction or allowing students more access to learning materials, they are often adopted piecemeal to address a specific problem. Are the students having difficulty attending lectures due to other demands or do they desire the ability to review lecture presentations? A lecture-capture system can be put in place to address that need. Would they benefit from having a central online repository of learning materials or from having some of their courses online? A learning management system can address that as well as other online course coordination needs. Is faculty desirous

of providing students with more opportunities for group interaction or analysis by participating in classroom discussions? A flipped classroom and/or a learning management system will address these needs.

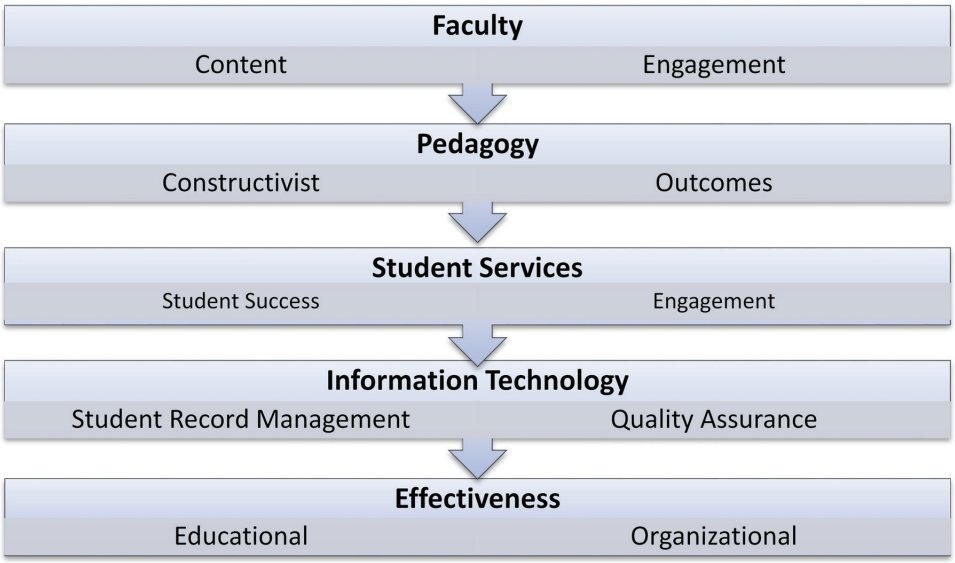
A dizzying array of instructional technologies is available to educational institutions and rates of adoption are rising at all levels of education. Providing more options for delivering instruction in different formats offers instructional benefit for educators. But the unique nature of health science education requires a systematic and integrative approach when instructional technology is introduced into the curriculum.

Various authors and researchers have offered methods for creating transformative learning in instructional modules (Berragan, 2011, 2013; Ruth-Sahd, Beck & McCall, 2010). Most agree that it is important to design instructional events that encourage reflection and lead to reflective practice. Methods for producing reflection such as transformative learning (Kitchenham, 2008), cognitive apprenticeships (Benner & Sutphen, 2007) and expansive learning (Engeström & Sannino, 2010) have been proposed as pedagogical solutions to train the reflective practitioner. Others have proposed models for integrating instructional technology systems into the curriculum (Hamlin, Griffy-Brown & Goodrich, 2003; Neumann & Neumann, 2010). The integration of technology into the health science curriculum requires a systematic approach that addresses the unique nature and requirements of health science education. The design framework of such a system must address the needs for faculty to provide and students to experience transformative learning events, while at the same time delivering increased student support, outcomes assessment and continuous quality improvement leading to increased organizational and educational effectiveness (Neumann & Neumann, 2010).

The advantage of combining an integrated system that combines constructivist pedagogy with powerful information technology has been discussed by Neumann and Neumann (2010). Their system, which they labeled the Robust Learning Model (RLM), features an innovative constructivist outcomes-based pedagogy incorporated into a strong information management system that addresses administrative record-keeping needs and student service needs. Figure 1 provides a schematic representation of the elements of the RLM.

Faculty are afforded a wide range of capabilities by the RLM from providing content in problem and project-based assignments to interacting with students in on-going outcomes-linked discussions. Both faculty and student performance is on display at all times providing a record that can be used for quality assurance purposes. The faculty, the pedagogy and the information management system form a powerful instructional environment for teaching and learning. Faculty members are encouraged to provide on-going engagement and feedback to the students on both their assignments and bi-weekly discussions. The faculty members provide the

*Figure 1. Instructional and administrative elements of the Robust Learning Model*




content, but it must be fit to a standard pedagogy that includes discussions, a mid-term case study and an end-of-term signature assignment all tied to student learning outcomes that link to program learning outcomes.

## THE CRITICAL ELEMENTS OF TRANSFORMATIVE LEARNING AND TECHNOLOGY

According to Snyder (2008) transformative learning requires three components: context, critical discourse and critical reflection. The design of any learning environment for transformative learning must address each of these. In this model of technology affordances for transformative learning environments, the context refers to the experience of the students and their current learning needs combined with the actual physical and technology learning. Health science education certainly needs to create a context supportive of the critical discourse and critical reflection so important for transformation learning. There are critical contextual and transformative learning elements that a technology-enabled learning environment must contain to develop self-examination and reflective thinking that should be a priority of health science education.

In Collins, Brown and Newman's (1987) conception of learning environments for cognitive apprenticeship, they stressed the need to incorporate a set of contextual elements. Insofar as the cognitive apprenticeship, pedagogy supports the same kind

of thinking processes that take place in transformative learning; all are considered to be important elements to address in the design of a learning environment. They include:

- Situated learning;
- A culture of expert practice;
- Intrinsic motivation;
- Exploitation of cooperation;
- Exploitation of competition.

A technology-enhanced transformative learning environment in support of developing reflective practitioners can be a situated learning environment just by dint of integrating it into clinical learning settings where students are developing the skilled know-how and practices of the profession. The tasks, discussions and other learning activities afforded by the technology learning system will be in support of the hands-on learning taking place in the health setting and should be incorporated into the clinical training to create the perception of a single learning environment. A situated learning environment will afford students the ability to practice and apply knowledge and skilled know-how and also participate in social learning such as discussions, group activities and individualized work that will encourage the reflection that leads to transformative learning.

Environments for cognitive apprenticeship provide affordances for students to observe and hopefully mimic expert performance. To incorporate a culture of expert practice, educators must be able to draw upon students' real-world clinical experiences and classroom learning and integrate them into online discussions and activities. The learning system must allow faculty to integrate videos and learning materials that demonstrate effective practitioners at work and must structure discussions and other discourse activities to support both expert modeling and coaching.

A culture of expert practice allows students to observe not just experts but other apprentices at work providing access to a range of skill levels and a diversity of expert performance leading to an understanding that there are different paths leading to the achievement of the final product. Providing students with access to expert performance and providing affordances for discussion and reflection allows faculty to make both the observable and tacit aspects of expert performance visible to students creating an environment that addresses the high-end cognitive apprenticeship of thinking like an expert. Related group work can also bring successful problem-solving strategies and skills out in the open for all students to observe and learn from

Ryman, Burrell, Hardham, Richardson & Ross (2009) discuss authentic learning that outlines ways in which realistic, goal-directed learning increases motivation. Authentic learning experiences have been cited as a source of motivation for stu-

dents. According to Lombardi (2007) for instance, activities that promote authentic learning should be group-based and must provide a common goal for the learning community. Having a common learning goal creates more motivation for the group to interact, and this initiates the dynamics of social learning processes. Authentic learning exercises should mimic the complexity of real-world problems and can include problem-based, case-based or role-playing exercises. Providing authentic learning that mimics real-world learning activities begins to move online activities to a level of engaged learning that is the hallmark of video games. That level of engagement should be a goal for all educators and online learning systems designers.

Mims (2003) recommended a number of key characteristics in authentic learning experiences. The more critical of these include:

- Learning is centered on authentic tasks that are of interest to the learners.
- Students are engaged in exploration and inquiry.
- Learning is closely connected to the world beyond the walls of the classroom.
- Students become engaged in complex tasks and higher-order thinking skills, such as analyzing, synthesizing, designing, manipulating and evaluating information.
- Learning is student driven with teachers and other outside experts all assisting/coaching in the learning process.
- Learners employ scaffolding techniques.
- Students have opportunities for social discourse.

To support pedagogy, the instructional technology system should be capable of supporting a transformative learning pedagogy. This means it should allow for the integration of authentic learning activities as well as learning activities that support collaboration, discourse and reflective thinking by students. The following list describes online learning functions that address the elements of transformative learning.

Learning environments that are based on social constructivist learning principles are able to exploit benefits of cooperation (Collins, Brown & Holum, 1991). Just as students can benefit from affordances of a situated learning environment that allows them to use the environment as a scaffold for problem-solving, groups provide similar scaffolding because a range of skills and expertise can be found within the members of the group and can provides students with access to expertise they might not yet possess. Group activities such as role playing or dividing up various pieces of a problem and putting them together can provide opportunities for each student to observe and play a variety of roles. Cooperative problem solving can provide a range of social learning opportunities such as modeling that help make those elements of expertise and effective problem-solving strategies transparent that were once opaque.

While exploiting competition can be at odds with group-based learning and can create negative learning environments, competition can help students isolate and analyze errors in thinking, problem-solving and technique. It may be more productive to use group-based competition to avoid creating losing situations for individuals but, whatever the approach, according to Collins et al. (1991) the focus should always be on the process of problem solving, not on the product. This lessens the stigma of making an error and having it scrutinized by other students.

All of these contextual elements put together help to create an environment of enhanced learning. Technology tools can enhance learning ever more.

## TECHNOLOGY TOOLS

### Wikis

Wikis are web applications that allow groups to add, delete and edit content on a web page in collaborative development efforts. The most famous wiki is Wikipedia, which is considered the bane of their existence by many faculty members but at the same time considered a treasure by students worldwide. Wikis have been used in a multitude of ways and lately schools at several levels have been experimenting with assignments that require student groups to work together in creating a wiki on some topic. Obviously, the collaboration aspect of wikis addresses social learning elements in situated learning as well as the transformative learning design process.

### Online Discussion

Online discussions are probably familiar to most faculty members who have access to one of the main learning management systems such as *Blackboard* or *Canvas*. They have been standard features of online learning since the early days of online learning. Current learning management systems usually provide capabilities for creating topic-based asynchronous discussions around a single topic often with the ability to create "threads" composed of sub-discussions made of responses to a particular question or to another student's response. Online discussions can serve as a major affordance for both critical discourse as well as critical reflection. The problem with most discussions is that students can take the discussion off in multiple directions not intended by the faculty member.

## Cases and Problem-Based Activities

Cases and problem-based learning activities are similar in that they can be constructed to support instrumental learning and exploration. Cases are often designed for individual work and problem-based activities are based on cooperative learning. Both approaches can be enhanced by a modern learning management system that support the development of multimedia teaching materials. The learning management system needs to support the creation of lessons and activities that merge content of various formats such as text, pictures and video. The creation of such materials in case-based learning support the kind of teaching that integrates teaching to the three high-level apprenticeships (knowledge, skilled know-how, ethical comportment) that is critical for producing reflective practitioners.

## Blogs

Blogs are a form of online journaling and have been used to support a variety of learning activities. Blogs can be used in a way similar to portfolios by having students record thoughts and reflections on particular topics or by asking them to create an ongoing commentary or reactions to questions related to the content or skills they are learning. They are clearly tools for both critical reflection needed in discourse as well as in critical self-reflection and can be especially powerful tools for following-up either clinical or online activities to provide the opportunity for reflection that is required for transformative learning. Blogs are typically filled out on a daily or other regular basis and are typically available to others to read, although this is not always the case. Access can be restricted to select groups such as classmates.

## Jigsaw Activities

Jigsaw activities require students to break a problem into pieces and work on different elements of the problem in groups and then come together to create a unified product. Designed by the social psychologist Eliot Aronson to create unity in schools that had been recently integrated, jigsaw activities involve breaking problems into parts, assigning the parts to different groups and having individuals learn about their topic. Students present the results of their research and there is a critical discourse to integrate ideas and resolve differences in a final report. Groups present their final report to the other groups and this allows students to compare and contrast and draw on social learning principles of modeling and observation that assist students in learning from students' perspectives and problem-solving processes.

## Video

Video can be an important tool for feedback on clinical skills but can also serve as modeling and coaching for reflection and the transformative layer. Video can be used to record student performances in clinical settings or it can present examples of critical skills or expert performance to provide students with additional modeling and scaffolding experiences. Video libraries allow sharing of examples of expert practitioner performance, guidance and mini-tutorials. A well-designed library of videos can be used to address a number of elements of situated learning including:

- **Modeling:** Examples of experts in action can serve to provide students with examples of excellent practice as well as aid in the development of internal models of practice that students can use to gauge their own performance.
- **Coaching:** Although pre-recorded videos cannot address students' specific performance issues, they can still provide coaching in the form of general tips that highlight and clarify aspects of novice performance that are generally problematical as well as critical elements of expert performance and problem-solving.
- **Sequencing:** Video libraries afford the faculty with the ability to select videos that demonstrate skills and problem-solving processes in simple-to-complex sequences, provide a diversity of examples and are global to specific sequences.

## Simulation

Simulation, either with technology-equipped manikins or with simulated patients, provides affordances for practice of skills and application of conceptual knowledge. Creating the transformative learning environment requires that hands-on learning experiences be linked with follow-up activities such as online discussions that provide opportunities for critical discourse and also for critical reflection with technology affordances such as electronic blog or portfolio assignments. Simulations can provide a foundation for a number of follow-up online activities that provide opportunities for transformation learning. The information technology system has to provide a seamless integration with the hands-on experience to make all this effective.

## Portfolios

Portfolios can serve students either as a growing repository of their work and progress but also as a forum for reflection at the transformative learning level. Portfolio exercises can guide students in reflective activities about their own and other's per-

formances and practices and can be linked with both hands-on and online learning activities. Unlike blogs, portfolios tend to be closed, although it is obviously helpful to provide access to relevant faculty members.

## FUTURE DEVELOPMENTS

The constant development of new forms of technology makes it difficult to predict what new capabilities are on the horizon, but it seems reasonable to assume that new forms will make mobile devices more useful in education. Providing students with tangible evidence of learning progress supports intrinsic motivation, a critical element of situated learning. One approach is to use technology to track and provide indicators of students' developing skills. This can be done using what are called digital badges and digital badging systems. Digital badging systems for informal learning has been developing for several years. Mobile applications are growing every day. Gamification and augmented reality can now be found in limited applications in education and virtual reality is on the horizon.

## CONCLUSION

Instructional technology allows faculty members to address transformative learning through the design of technology-supported learning environments that support instrumental and communicative learning with opportunities to participate in critical discourse and critical reflection. In current practice, instructional technology is often implemented piece-meal resulting in a fragmented learning experience for students. The more information technology driven learning activities can be linked with hands-on clinical or classroom learning situations the more faculty members and students can benefit from the power of situated learning. Extending learning from place-based situations to anywhere, anytime learning with instructional technology creates new opportunities for learning, assessment and student success efforts as well as increasing opportunities for teaching that can lead to transformative learning.

## REFERENCES

Benner, P. (1984). *From novice to expert: Excellence and power in clinical nursing practice*. Menlo Park, CA: Addison-Wesley Publishing Company.

Benner, P., & Sutphen, M. (2007). Learning across the professions: The clergy a case in point. *The Journal of Nursing Education*, *46*(3), 103–108. PMID:17396548

Benner, P., Sutphen, M., Leonard, B., & Day, L. (2010). *Educating nurses: A call for radical transformation*. San Francisco, CA: Jossey-Bass.

Berragan, L. (2011). Simulation: An effective pedagogical approach for nursing? *Nurse Education Today*, *31*(7), 660–663. doi:10.1016/j.nedt.2011.01.019 PMID:21334797

Berragan, L. (2013). Conceptualising learning through simulation: An expansive approach for professional and personal learning. *Nurse Education in Practice*, *13*(4), 250–255. doi:10.1016/j.nepr.2013.01.004 PMID:23402772

Collins, A., Brown, J. S., & Holum, A. (1991). Cognitive apprenticeship: Making thinking visible. *American Educator*, *15*(4), 6–46.

Collins, A., Brown, J. S., & Newman, S. E. (1987). *Cognitive apprenticeship: Teaching the craft of reading, writing and mathematics* (Technical Report No. 403). BBN Laboratories. Cambridge, MA: Centre for the Study of Reading, University of Illinois.

Cranton, P. (2010). Transformative learning in an online environment. *International Journal of Adult Vocational Education and Technology*, *1*(2), 1–10. doi:10.4018/javet.2010040101

Engeström, Y., & Sannino, A. (2010). Studies of expansive learning: Foundations, findings and future challenges. *Educational Research Review*, *5*(1), 1–24. doi:10.1016/j.edurev.2009.12.002

Faulk, D., & Morris, A. (2012). Transformative learning environments: Teacher and learner perspectives. In A. Morris & D. Faulk (Eds.), *Transformative Learning in Nursing*. New York: Springer Publishing Company.

Fetherston, B., & Kelly, R. (2007). Conflict resolution and transformative pedagogy: A grounded theory research project on learning in higher education. *Journal of Transformative Education*, *5*(3), 262–285. doi:10.1177/1541344607308899

Hamlin, Griffy-Brown & Goodrich, J. (2003). From vision to reality: A model for bringing real-world technology to the management education classroom. In C. Wankel & R. DePhillipi (Eds). *Educating managers with tomorrow's technology,* (pp. 211-238). Greenwich, CT: Information Age Publishing.

Kitchenham, A. (2008). The evolution of John Mezirow's transformative learning theory. *Journal of Transformative Education*, *6*(2), 104–123. doi:10.1177/1541344608322678

Mezirow, J. (1992). Transformation theory: Critique and confusion. *Adult Education Quarterly*, *42*(4), 250–252.

Mims, C. (2003). Authentic learning: A practical introduction and guide for implementation. *Meridian: A Middle School Computer Technologies Journal*, *6*(1). Retrieved from http://www.ncsu.edu/meridian/win2003/authentic_learning/index.html

Neumann, Y., & Neumann, E. (2010). The robust learning model (RLM): A comprehensive approach to a new online university. *Journal of College Teaching and Learning*, *7*(1), 2.

Noone, J. (2009). Teaching to the three apprenticeships: Designing learning activities for professional practice in an undergraduate curriculum. *The Journal of Nursing Education*, *48*(8), 8. doi:10.3928/01484834-20090518-08

Ruth-Sahd, L. A., Beck, J., & McCall, C. (2010). Transformative learning during a nursing externship program: The reflections of senior nursing students. *Nursing Education Perspectives*, *31*(2), 78–83. PMID:20455362

Ryman, S., Burrell, L., Hardham, G., Richardson, B., & Ross, J. (2009). Creating and sustaining online learning communities: Designing for transformative learning. *International Journal of Pedagogies and Learning*, *5*(3), 32–45. doi:10.5172/ijpl.5.3.32

Snyder. (2008). Grabbing hold of a moving target. *Journal of Transformative Education, 6*(3), 159-181.

Terry, A., & Faulk, D. (2012). Transformative learning in the online environment. In A. Morris & D. Faulk (Eds.), Transformative learning in nursing, (pp. 138-151). New York: Springer Publishing Company.

## KEY TERMS AND DEFINITIONS

**Apprenticeship:** Traditional method of training people into a profession that has powerful features for learning. Researchers such as Jean Lave, Allan Collins and John Seely Brown have identified effective learning and teaching techniques from apprenticeship learning and applied them to classroom learning.

**Authentic Learning Activities:** Online or in-class activities that mimic real-world issues or situations. In the health sciences, this could be simulated patients, problem-based learning exercises or cases.

**Cognitive Apprenticeship:** Extension of apprenticeship training techniques to the teaching of cognitive and metacognitive skills.

**Flipped Classrooms:** Where the usual classroom lecture is video-taped and viewed online and classroom time is used for discussions and group activities.

**Massively Open, Online Courses (MOOC):** Online courses offered to hundreds or thousands of students, often for free. Topics are often of general interest to attract a large number of students.

**Situated Learning:** Learning a skill or developing knowledge in the situation those skills and knowledge are used. Also, called learning in context. Learning in a context where the knowledge and skills are used provides extra support for the skills being developed as the situation itself provides signs and support for the developing skill.