Congruency between educators' teaching beliefs and an electronic health record teaching strategy ☆

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SUMMARY

Background: Technology has changed healthcare institutions into automated settings with the potential to greatly enhance the quality of healthcare. Implementation of electronic health records (EHRs) to replace paper charting is one example of the influence of technology on healthcare worldwide. In the past decade nursing higher education has attempted to keep pace with technological changes by integrating EHRs into learning experiences. Little is known about educators' teaching beliefs and the use of EHRs as a teaching strategy.
Aim: This study explores the composition of core teaching beliefs of nurse educators and their related teaching practices within the context of teaching with EHRs in the classroom.
Methods: A collective case study and qualitative research approach was used to explore and describe teaching beliefs of seven nurse educators teaching with EHRs. Data collection included open-ended, audio-taped interviews and non-participant observation. Content analysis of transcribed interviews and observational field notes focused on identification of teaching belief themes and associated practices.
Findings: Two contrasting collective case studies of teaching beliefs emerged. Constructivist beliefs were dominant, focused on experiential, student-centered, contextual and collaborative learning, and associated with expanded and a futuristic view of EHRs use. Objectivist beliefs focused on educators' control of the context of learning and were associated with a constrained, limited view of EHRs. Constructivist educators embrace technological change, an essential ingredient of educational reform.
Conclusions: We encourage nurse educators to adopt a constructivist view to using technology in teaching in order to prepare nurses for a rapidly changing, technologically sophisticated practice.

Introduction

Teaching beliefs determine, inform, and justify teaching practices of educators (Devine et al., 2013; Pajares, 1992; Taylor et al., 2007). Understanding core teaching beliefs is critical to educators' professional development and their ability to achieve successful educational outcomes (Kuzborska, 2011). Teaching beliefs, advances in technology, and the accompanying knowledge explosion are important elements that inform teaching practices and influence nursing higher education (Fetter, 2009; Gardner and Jones, 2012). Health information technology (HIT) has transformed healthcare; therefore, nurse educators must integrate HIT into curricula as learning experiences to remain on the cutting edge of change, educational reform, innovation and preparation of a knowledgeable workforce (Gardner and Jones, 2012).

The American Association of Colleges of Nursing AACN (2008) and the National League for Nursing (NLN, 2008) identified informatics as an essential competency of nurse educators to prepare them for effective integration of informatics into nursing curricula. Therefore, integrating EHRs as a learning experience in nursing education is one example of an essential component of informatics integration (Gardner and Jones, 2012). One program's attempt to integrate EHRs into nursing education in the United States (US) is the education/business partnership between the School of Nursing (SON) at the University of Kansas (KU) and an IT vendor. The project was called the *S*imulated *E*lectronic h*E*alth *D*elivery *S*ystem (SEEDS) and aimed to teach students nursing course content using EHRs (Kennedy et al., 2009; Warren et al., 2002).

Regardless of the persistent demand that nurse educators use technology in education, teaching with EHRs was a new context for educators teaching in the SEEDS project. While educators were required to teach students course content using EHRs, very little was known about the composition of the teaching beliefs that guided their instructional approach while using this technology. Use of EHRs was a new teaching-learning modality for nurse educators; therefore, making known their underlying teaching beliefs may assist other educators in evaluating their own teaching beliefs when using EHRs (Taylor et al., 2007). Current research asserted the link between educators' teaching

beliefs and technology integration in the classroom (Kala et al., 2010; Lawrence, and Lentle-Keenan, 2013). Explicating educators' teaching beliefs is essential to understand the congruency between teaching beliefs and practices within the context of teaching with EHRs. The current study aims to explore the concepts, themes and patterns that comprise the teaching beliefs and practices of educators teaching with EHRs in the SEEDS project.

Background

Teaching Beliefs and Practices

Teaching beliefs is a complex concept; multiple terms have been used to identify the concept. Initially defined by Pajares (1992) as teaching philosophy or paradigm that guides teachers' practices, other educational researchers expanded the definition of teaching beliefs to include personal convictions or opinions about teaching (Tarman, 2012). Irez (2007) provided a comprehensive definition of teaching beliefs and stated that: "Beliefs are psychological constructs that (a) includes understandings, assumptions, images or propositions considered to be true, (b) drive a person's actions and support decisions and judgments, (c) have highly variable and uncertain linkages to personal, episodic and emotional experiences, (d) although undeniably related to knowledge, differs from knowledge in that beliefs do not require a condition of truth" (p. 17). Evidence supports the significance of beliefs associated with understanding educators' teaching practices (Ertmer and Ottenbreit-Leftwich, 2010) and are known to influence teaching goals, materials and decision-making processes in the classroom (Kuzborska, 2011; Potter, 2013). Two main contrasting beliefs in education are evident in the literature: objectivism and constructivism (Taylor et al., 2007). Traditional teaching beliefs emerged from early Greek philosophies, focused on a positivistic way of thinking, and controlled the field of education for decades (Pajares, 1992). The assumptions relevant to the context of teaching include, a) *knowledge* is objective and decontextualized; b) *learning* is knowledge transmission, a reflection of what teachers know, well-structured; c) *reality* is objective and external to the knowing subjects, and d) *instructions* should be designed to transfer the knowledge to the learners through abstract rules, lectures, and prediction (Ertmer and Ottenbreit-Leftwich, 2010).

The practices of objectivist educators focus on what to think, emphasis on the content, use of predetermined instruction, and limited interactions (Ottenbreit-Leftwich et al., 2010). Objectivism seems to lend itself to values of conformity, uniformity, and passivity—a "one-size-fits-all" approach to teaching. This philosophy assumes that everyone can learn the same content in the same way at the same pace (Potter, 2013). Within this perspective, objectivist beliefs can be described as teacher-focused wherein an educator controls the context of learning. Potter (2013) called objectivism a "dead philosophy" and made a plea for the alternative teaching philosophy of constructivism.

Constructivism emerged from cognitive, social, and psychological research, and arguably begins with Kant, to challenge objectivism (Glasersfeld, 1996). This belief structure considers knowledge as viable in the experiential world of individuals (Taylor et al., 2007). Assumptions of constructivism include, a) *knowledge* is constructed and situated in experiences; b) *reality* is a product of the mind; the structure of the world is created in the mind through interaction with the world; c) *learning* is the construction of knowledge and meaning, interpretation of the world, experiential, articulation–reflection, and process oriented; and d) *instructions* are reflections of multiple perspectives, inductive, modeling, and learner-generated (Ertmer and Ottenbreit-Leftwich, 2010). Within this context, education should focus on providing learners with the means and facilitation necessary to assist them to construct their own knowledge (Potter, 2013). Unlike objectivism, education in a constructivist view is an active and experiential learning pedagogy in which students learn by applying latent knowledge alike to the present situation; through this application and later reflection on the results of the application, students are expected to create a new synthesis (Potter, 2013). For Potter (2013), the goal of constructivism is lifelong learning that places students in authentic contexts involving practice, reflection, and feedback.

Constructivist teaching practices encourage multiple perspectives, enhance students' ownership of knowledge, reveal the "why" underlying teaching style (Potter, 2013; Taylor et al., 2007). Constructivist teachers use multiple strategies such as role-playing, simulation, project-based courses, problem-based learning, case-studies, and team-based learning (Potter, 2013). The educator is a facilitator in learning, considers students' experiences and enhances their interactions (Taylor et al., 2007) and use dialog, reflection, critical thinking and interaction (Ertmer and Ottenbreit-Leftwich, 2010). Constructivism allows for a deep, long-lasting learning and is favored by many educators within different disciplines (Potter, 2013).

Constructivism has demonstrated its utility in all levels within higher education. A growing body of nursing higher education literature indicated its applicability to nursing education with desirable learning outcomes (Brandon and All, 2010). Constructivist nurse educators are prepared to integrate multiple teaching strategies suitable for today's learners including teaching with technology (Kala et al., 2010). Using EHRs in the classroom is a new strategy for nurse educators; however, little is available about educators' teaching beliefs and practices and their relationship to the use of EHRs in the classroom. Therefore, this study attempted to expand the knowledge about teaching beliefs and practices of educators teaching with EHRs to evaluate the relationship between teaching beliefs and EHRs teaching strategy.

Electronic Health Record and Its Application in the SEEDS Project Electronic Health Records (EHRs)

EHRs is a "digital" version of patient's paper charts or an application of information technology (Gardner and Jones, 2012). It refers to "large computerized database management systems used by clinicians to access a wide range of patient care information systems, nursing information systems, medical information systems, and patient care management systems" (Axford and Carter, 1996, p. 156).

The promising influence of the EHRs on the US healthcare system has prompted the Institute of Medicine (IOM) (2001) to recommend integration of EHRs into clinical settings. As frontline healthcare professionals, nurses are obliged to use EHRs in clinical practice and must evaluate the utility and clinical outcomes associated with their use. Eastaugh (2012) found that EHRs use was associated with a 1.6% increase in the productivity in 58 US hospitals during a 3-year period, 2008 to 2011. For example, EHRs use decreased the time for a medication order to be filled and administered, from 28 min in 2008 to 8 min in 2011 in same hospitals (Eastaugh, 2012). Waneka and Spetz (2010) reviewed existing nursing literature on EHRs use and found that adoption of EHRs have desirable clinical outcomes such as improvement in the quality of nursing documentation, workflow, the time to administer medication, and the time for patient discharges and transfers. Of particular clinical and economic significance, the use of EHRs was associated with a 13% decrease in the development of hospital acquired pressure ulcers in 29 US hospitals (Dowding et al., 2012). Kutney-Lee and Kelly (2011) found that the use of EHRs was associated with enhancing patient safety.

Today, there is an accelerated use of EHRs with more than 80% of healthcare providers demonstrating meaningful use of EHRs compared to only 9% in 2008 (U.S. Department of Health and Human Services, 2013). Similar to nurses in practice settings, nurse educators have attempted to keep pace with technological changes and respond to the demands that nursing education prepare competent nurses for practice by integrating EHRs into teaching education. An example of such attempts is the experience of the University of Kansas (KU/SON) which integrated EHRs into their undergraduate nursing curriculum through the SEEDS project (Kennedy et al., 2009).