



UNIVERSITY OF CALGARY | WERKLUND SCHOOL OF EDUCATION

SIGNATURE PEDAGOGIES FOR E-LEARNING IN HIGHER EDUCATION AND BEYOND

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Abstract

This report explores the notion of signature pedagogies within the field of e-learning for higher education. We build on previous work that examined signature pedagogies in education, linking the concepts of signature pedagogies, the profession of education and e-learning as a means to help educators develop their practice and understanding of the profession.

Keywords: signature pedagogies, e-learning, higher education, online education

Preamble

In November 2016, approximately thirty scholars, practitioners, industry leaders and government officials assembled at The White House for the “Technology in English” event, which was a collaborative effort between The White House Office of Global Engagement and the U.S. Department of State, Bureau of Educational and Cultural Affairs, Office of English Language Programs. The event was part of the inter-agency English for All initiative, announced by President Obama earlier in 2016 (United States Department of State, 2016). The purpose of the event was to gather together individuals with combined expertise in educational technology and English language learning and teaching. Sarah Elaine Eaton, one of the authors of this report, was among those invited to take part in The White House event.

One outcome of the meeting was a commitment to develop a prototype or resource that would serve as an Open Educational Resource (OER), not only for participants of programs sponsored by the U.S Department of State, and educators generally. The project is to be presented at the TESOL 2017 International Convention and English Language Expo in Seattle, Washington State.

In addition, experts were invited to develop and contribute additional resources that would benefit educators in their professional development. This report was prepared as an additional Open Educational Resource for use by those interested in developing their knowledge of signature pedagogies for e-learning in education.

Open Educational Resource (OER) Declaration

One of the most often cited definitions of OER comes from The William and Flora Hewlett Foundation: “Open Educational Resources are teaching and learning resources that reside in the public domain or have been released under an intellectual property license that permits their free use...” ([The William and Flora Hewlett Foundation website](#)). In keeping with the intention and spirit of OER, we offer this report free of charge to educators, learners and researchers everywhere under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License. We invite you to use it, cite it, share it with others and share your feedback about the report with us. The authors’ website profiles are included at the end of this report. We welcome your feedback.

Introduction

The purpose of this document is to explore Shulman's (2005a) notion of signature pedagogies in relation to e-learning. We focus specifically on ways signature pedagogies can be applied to e-learning environments that train and develop educators' professional learning and growth.

The intended audience of this report includes scholars, instructors, trainers, program designers, faculty development specialists, and other professionals interested in understanding, developing and implementing e-learning programs as a means to build capacity among educational professionals.

In this report, the reader can expect to learn how Shulman's (2005a) notion of signature pedagogies can be used as a framework for effectively using e-learning for instructional delivery. We begin with a definition of signature pedagogies (Shulman, 2005a, 2005b) and e-learning. From there, we delve deeper into two key elements of e-learning: synchronous and asynchronous learning environments, offering examples of learning activities that can occur in each environment. Then, we link signature pedagogies with e-learning, focusing on the field of education. We conclude by offering an application of signature pedagogies for e-learning in the field of education.

Signature Pedagogies Defined

Signature pedagogies are the "types of teaching that organize the fundamental ways in which future practitioners are educated for their new professions" (Shulman, 2005a, p. 52).

An essential characteristic of Shulman's work is that he focuses on the professions as a starting point for signature pedagogies, noting that a key feature is how novices are instructed in a particular discipline to build their understanding of the profession. Shulman (2005a) noted three dimensions of instructional strategies of signature pedagogies:

1. Surface structure;
2. Deep structure; and
3. Implicit structure.

Surface structure involves the operational elements of teaching and learning, how lessons are organized and how teaching is done within a particular discipline. Deep structure delves into the assumptions educators make about how knowledge is best learned and how a developing practitioner learns to think like a professional. Finally, the implicit structures include the moral aspects of teaching and learning in a given discipline, including beliefs, values and attitudes.

Shulman's (2005a, 2005b) scholarship on signature pedagogies is focused largely on conventional learning that happens in a face-to-face classroom. However, in his concluding remarks, Shulman (2005a) suggested the possibility that the notion of signature pedagogies could be expanded. He noted, "new technologies of teaching via the Internet; Web-based information seeking; computer-mediated dialogues all create an opportunity for reexamining the fundamental signatures we have so long taken for granted" (p. 59). Our work picks up where Shulman (2005a) and others have left off. Specifically, we explore the notion of signature pedagogies as they apply to educators who teach in e-learning environments.

We use the term *educators* broadly and inclusively. It is our position that e-learning offers opportunities for educators in a variety of professional, geographic and socio-economic contexts to improve their practice.

E-learning Defined

A variety of terms are used to refer to learning that occurs using technology as a means to deliver and facilitate learning. These include "e-learning", "online learning", "web-based learning", "web-based training", and "distance learning", among others (Moore, Dickson-Deane & Galyen, 2011). Educators themselves do not always agree on what these terms mean or how they are defined (Moore et al., 2011).

The term "e-learning" was first used in the 1990s and was first used to refer to asynchronous learning, specifically, online discussion groups (Garrison, 2011). Asynchronous learning is also referred to as "on demand" or "anytime" learning.

It is worth noting that Garrison's (2011) definition of e-learning appears to assume learning happens via the Internet, whereas Moore et al. (2011) include technologies such as CDs and DVDs in their consideration of e-learning. While we recognize that in many global communities, technologies such as CDs and DVDs still play an important role for learners with limited or no Internet access, for the purposes of this report, we have focused more closely on e-learning that is delivered via the Internet.

As technology and the Internet evolved, synchronous learning, also referred to as "real time" learning, emerged. Garrison (2011) noted that now "e-learning is formally defined as electronically mediated asynchronous and synchronous communication for the purpose of constructing and confirming knowledge" (p. 2).

Throughout this report, the terms “e-learning” and “online learning” are used interchangeably to discuss Internet-based learning, facilitated by an instructor and delivered using a course or learning management system, such as Blackboard, BrightSpace (formerly called Desire2Learn), Canvas, and Adobe Connect.

Examples of Synchronous and Asynchronous Learning Environments

Online courses may include a combination of synchronous (real-time) and asynchronous (on-demand) modes of learning, not necessarily with an equal weighting or emphasis on each of the modes. Scholars have long known that educators use each mode of learning for different purposes (Brannon & Essex, 2001; Chou 2002; Hrastinski, 2008) and to different extents.

Examples of some modes and types of learning that fall into each category are briefly outlined in Table 1.

Table 1

Overview of Learning Tasks and Approaches in Asynchronous and Synchronous E-Learning

Learning mode	Type of learning	Purpose
Asynchronous learning	Discussion board	<ul style="list-style-type: none">• Read/view and respond to course material (e.g. readings, videos, slide presentations).• Instructor communication about learning goals, tasks and administrative aspects of a course.• Student groups to plan and implement projects using discussion board to communicate.
	Audio and video	<ul style="list-style-type: none">• Video and audio discussion board posts.• Instructor feedback using audio and video tools.• Podcasts.• Audio or video recordings.• Narrated slide presentations.

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	Text-Based Assessment	<ul style="list-style-type: none">• Summative assessment: Tests and quizzes.• Summative assessment: Grades and feedback on completed work.• Formative assessment: Surveys.• Formative assessment: Student peer feedback on draft work.• Formative assessment: Instructor feedback on draft work.
	Collaboration	<ul style="list-style-type: none">• Use of Google docs or other collaborative tools for co-construction of knowledge, text-based chat.
	E-mail	<ul style="list-style-type: none">• Students communicate with each other and with their instructors via e-mail.
Synchronous learning	Text-based chat	<ul style="list-style-type: none">• Exchange information, ideas and insights in real time using text.
	Audio conferencing	<ul style="list-style-type: none">• Exchange information, ideas and insights.
	Video conferencing	<ul style="list-style-type: none">• Engage in large group discussion.• Engage in small group discussion (e.g. breakout sessions).• Real-time demos of programs or apps through screen sharing on a computer.
	Real-time polls	<ul style="list-style-type: none">• Gather input or opinions quickly.
	Assessment	<ul style="list-style-type: none">• Real-time audio and video feedback.
	Real-time collaboration	<ul style="list-style-type: none">• Google hangouts, Skype, or other interactive collaborative apps or platforms.

Signature pedagogies: Surface, deep and implicit learning in e-learning

Although Shulman (2005a, 2005b) outlined three dimensions of instructional strategies of signature pedagogies – surface, deep and implicit learning – scholarship to date about e-learning seems to have focused more exclusively on surface and deep learning processes (Akyol & Garrison, 2011; Garrison & Cleveland-Innes, 2005; Offir, Ke & Xie, 2009; Lev & Bezalel, 2008; Ravenscroft & Boyle, 2010; Redmond & Lock, 2008). There appears to be somewhat of a gap in the e-learning literature that addresses the notion of implicit learning structures in online environments, though there is a small, but growing, body of literature on how signature pedagogies can apply to online learning in the field of education (Brown, Jacobsen & Lambert, 2014; Preciado Babb, 2014).

Surface structures

According to Shulman (2005) surface structures consist of “concrete, operational acts of teaching and learning, of showing and demonstrating, of questioning and answering, of interacting and withholding, of approaching and withdrawing” (pp. 54-55).

Example: Real-time polls

One example of surface learning in a synchronous environment is a real-time poll administered by the instructor to the learners. The use of a poll involves a straight forward question-and-answer interaction initiated by the instructor and answered by the students.

This is an example of surface learning because during a poll the instructor demonstrates the how instructors can interact with students through questions. The results can be shared with the entire group and provide a basis for further discussion.

Example: Podcasts

Podcasts allow educators to share information via a one-way transmission of ideas, concepts or processes. A podcast can guide a student through a process, allowing them to practice and understand the concept at his or her own pace in an on-demand format. This can replace time-intensive contact with tutors or instructors and allows students to develop skills at their own pace (Williams, 2014).

This is an example of surface learning because it demonstrates how instructors can approach the delivery of information, or guide students through a process. This transmission or guidance is an operational act of teaching and learning.

Deep structures

Shulman (2005) explained deep structures as “a set of assumptions about how best to impart a certain body of knowledge and know-how” (p. 55). In order to arrive at the deep structures of a signature pedagogy in online learning in education, teacher presence is critical as it provides a foundation upon which learning is facilitated (Garrison, Anderson & Archer, 2000; Garrison & Cleveland-Innes, 2005; Mitchem, Fitzgerald, Hollingshead, Koury, Miller, & Tsai, 2008). Two examples of how deep structures in learning might be achieved in online learning for educators are case-based learning and inquiry-based learning. Each of these is explored below.

Example: Case-based learning

Case-based learning “comprises the use of authentic complex situations in order to prompt learners’ deep analysis of ... problems, consideration of underlying principles, suggestions for resolution and reflection on the problem-solving process” (Ertmer & Koehler, 2014, pp. 617-618). Case-based learning helps educators to bridge the cognitive gap between theory and practice by inviting them to consider real-world problems (Mitchem, Koury, Fitzgerald, Hollingshead, Miller, Tsai & Zha, 2009). In other words, case-based learning provides students the opportunity to apply their knowledge to problems that mirror the real-world in a low-stakes environment.

In the field of education, case-based learning has been found to translate well into an online environment. In a conventional, face-to-face classroom, students would read a case prior to attending class and then discuss the case during class time. With e-learning, students review the case and then discuss it either asynchronously via a discussion board or synchronously using real-time text, video or audio conferencing systems. Cases themselves are no longer simply text-based readings, but can include multi-media such as images, video and sound to animate “the creation of a realistic practice field for teachers to solve problems” (Mitchem et al. 2009, p. 299).

Case-based learning is an example of a deep structure in learning because it teaches students to imagine themselves as professionals, engaging with real-life scenarios and possibilities. They learn the “know-how” that Shulman talks about through discussions and understanding of the cases they examine.

Example: Inquiry-based learning

Inquiry-based learning involves instructor-guided student centered questions that challenge students to systematically move “from one level of understanding to another, higher level” of understanding (Justice, Rice, Warry, Inglis, Miller, & Sammon, 2007, p. 202). Educators who use

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inquiry-based approaches to learning tend to assume that students are motivated to learn about a topic due to the personal interest and that the questions will originate from the students themselves. In an online environment, this might entail having students investigate topics of interest and share the information with others in weekly discussions. The instructor acts as a facilitator of the student's developing body of knowledge rather than as a disseminator of knowledge.

Both examples are founded on the idea that when students engage in case-based learning and inquiry-based learning, that these signature pedagogies promote the deep structures of problem-solving, higher order thinking and collaboration among students (Redmond & Lock, 2008).

Implicit structures

The implicit structures of learning in the professions touch upon “a moral dimension that comprises a set of beliefs about professional attitudes, values, and dispositions” (Shulman, 2005, p. 55). These are arguably the most complex elements of signature pedagogies to disentangle because they involve questioning judgement, morality, and, what Shulman (2005) refers to as, the “hidden curriculum” (p. 55).

We recognize that implicit structures will inform how educators approach signature pedagogies in e-learning. In online learning, the implicit structures are likely to be embedded elements of learning. Discussions about what is ethical or acceptable in classroom-based research or practice, for example, touch upon the implicit structures in learning.

Example: Formative assessment

Developing students' professional attitudes and understanding about the value of formative assessment is another example of the implicit nature of signature pedagogies in education. In online education, instructors who model formative assessment are not only offering students feedback on work in progress, but they are also incorporating elements of peer feedback into the course, coaching students along the way about how to give effective peer feedback and demonstrating why formative feedback is important. This kind of coaching can build students' skills in conducting formative peer feedback (e.g., through discussion board posts or conversations in synchronous sessions), but can also cultivate their understanding of why it is valuable. The latter of these could be considered part of the “hidden curriculum” of signature pedagogies in education.

These examples of surface, deep and implicit learning show how Shulman's (2005) model of signature pedagogies can apply to e-learning for education. These examples are not intended

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as an oversimplification of how learning is designed or occurs in online environments. Learning, and learning design, are not without complexities. In the next section, we offer an additional example of how such complexities manifest in an online environment.

Learning potential lost

Some learning activities have the potential to cultivate deeper learning experiences, but they can fail to do so if activities are not designed and implemented properly.

Example: Discussion boards

Using designs focused on learning, asynchronous discussion boards can be used to support deep scholarly interactions and participatory knowledge building in community. However, asynchronous discussion boards are too often an enactment of surface learning in which students read and respond to questions or readings, without being required to engage deeply with the material, with each other or with their instructors. Scholars have pointed out that while discussion boards offer the opportunity for deeper learning, all too often they are not used to their full potential, resulting in students being stranded in a surface-level interaction devoid of deeper learning (Braun, 2008; Garrison & Cleveland-Innes, 2005; Redmond & Lock, 2008). As such, asynchronous discussion boards have become a source of vexation for scholars of online learning who are eager to find ways to elevate discussion boards above operational learning transactions.

Towards an Application of Signature Pedagogies for E-Learning in Education

Signature pedagogies for e-learning in education will encompass the same elements as those for education in general; however, there is general agreement within the field of education that learning in online environments is “vastly different than in traditional classrooms” (Braun, 2008). E-learning adds a layer of complexity as the mode of learning through the use of Internet-based tools, platforms and applications becomes an integral element not only of the way materials are designed, developed and delivered, but also as a key function of how surface, deep and implicit learning is enacted in an online space.

When instructors are designing online courses and selecting signature pedagogies, they are well advised to take into consideration the Community of Inquiry framework (Garrison, et al., 2000) which can assist with decision-making. Designs to promote a community of inquiry need to consider the dynamics of a community of e-learners during a course of study.

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The Community of Inquiry Framework “represents a collaborative approach to inquiry that fuses personal reflection and shared discourse for a deep and meaningful learning experience” (Garrison, 2016, p. 53). Attention to learning as a social act and opportunities for social learning and peer-to-peer interaction need to be explicitly designed into an online environment. One implicit structure of all signature pedagogies in education (i.e., beliefs) is that students do not learn in isolation. Three key and interconnected elements of a community of inquiry are (1) social presence; (2) teaching presence; and (3) cognitive presence (Akyol & Garrison, 2008).

Indicators of a **social presence** in e-learning include open communication, affective expression, and group cohesion (Akyol & Garrison, 2008). The teacher plays a vital role in setting the tone for the social interactions in a course.

Teaching presence is also defined in terms of the course structure and providing direct instruction. Instructors are key in facilitating and monitoring the development of knowledge by individual students and by all learners in a community of inquiry. Specific signature pedagogical approaches, such as case-based learning and inquiry-based learning, rely on teacher facilitation for concept integration and knowledge consolidation.

Cognitive presence is connected to both practical inquiry (triggering events, exploration, integration, and resolution) and designs to sponsor critical thinking (Garrison et al., 2000; Garrison & Arbaugh, 2007). Developing learners’ understanding of the material requires them to be cognitively present through the learning process (Justice et al., 2007; Mitchem et al., 2008; Redmond & Lock, 2008). With the assistance of the instructor who designs triggering events or invitations, learners are scaffolded through a process of exploration, integration, and resolution. Cognitive presence often emerges from the inquiry students undertake within the course as well as their social engagement in a community of inquiry.

In a community of inquiry, the teaching and learning responsibilities are shared among all the participants. In a formal educational environment, this means that students take on more of the teaching responsibilities as the course progresses. This fosters the notion of a community of learners who are educators, and educators who are learners. In sum, those who aim to incorporate signature pedagogies into an online course are well advised to consider the Community of Inquiry framework and the three presences when designing learning activities.

To arrive at the implicit structures of a signature pedagogy, educators must reflect upon the processes of learning as they are engaging with material and designing learning experiences, as this would encompass part of “hidden curriculum” (Shulman, 2005a, p. 55) of teaching educators about their profession. Designing for a community of inquiry requires that educators consider the dynamics and social, cognitive and teaching presences in a community of e-

learners during a course of study. Bringing the two areas together, signature pedagogies for e-learning can be defined as the approaches in designing and assessing learning for an online community of inquiry that are fundamental to the discipline and related professions in the field.

Possible Directions for Future Research

One possible direction for future research on this topic is how online educators can undertake the challenge of cultivating and maintaining a Community of Inquiry in their courses, while employing signature pedagogies. We have identified online asynchronous discussion boards as one tool that has been consistently used in online learning for a number of decades (Garrison, 2011); we have also argued that discussion boards are not always used for full learning potential in online learning environments (Braun, 2008; Garrison & Cleveland-Innes, 2005; Redmond & Lock, 2008). Since discussion boards remain a cornerstone of online learning, there is more work to be done to more fully develop a Community of Inquiry in asynchronous learning environments.

There is a need for further examination of signature pedagogies in the context of online education as a means for educators to deepen their knowledge of the profession and their competence and confidence as educators.

Significance and conclusions

This report examines online learning for educators from the lens of signature pedagogies. We have examined surface, deep and implicit structures, according to Shulman's (2005) model. We build on the conversation begun by others around what signature pedagogies in online learning for educators look like (Brown et al., 2014; Preciado Babb, 2014).

Designing learning in an e-learning environment requires consideration of the differences between conventional and online learning. While educators may choose to incorporate similar learning activities (e.g., case-based learning, group discussion), the mode of learning (e.g., learning platforms, tools) and engagement in online learning may be different. Signature pedagogies should be chosen for their effectiveness at building capacity within the profession of education and for maintaining a community of inquiry. Whether they are surface, deep or implicit, implementing a signature pedagogy should be for the benefit of all learners.

Works consulted

The following sources have informed and shaped our work for this project. Unlike a typical list of references, not all sources listed below are cited in the body of the work, though they have provided us with useful background knowledge that has collectively helped to shape our understanding about signature pedagogies. We offer this list not only as a list of sources referenced, but also for further reading.

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