Design and teaching: a bibliographic essay

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ABSTRACT. Distance education, particularly online education, is becoming a standard experience in formal learning environments, particularly at the post-secondary level. As more faculty and students have expectations that distance education is a part of the learning experience, we need to build a deeper understanding of how to design effective environments to enhance and extend the learning process. Further, we need to explore how to best facilitate learning in these contexts. This bibliographic essay explores the literature related to design and teaching in distance education as presented in the 3rd section of Moore’s (2007) Handbook of Distance Education (Table 1 provides an overview of all the chapters in the Design and Teaching section of the Handbook).


KEYWORDS: design and teaching in distance education, facilitation of learning at distance.

MOTS-CLÉS: conception d’environnements d’apprentissage à distance, facilitation de l’enseignement à distance.

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Introduction

Distance education, particularly online education, is becoming a standard experience in formal learning environments, particularly at the post-secondary level. As more faculty and students have expectations that distance education is a part of the learning experience, we need to build a deeper understanding of how to design effective environments to enhance and extend the learning process. Further, we need to explore how to best facilitate learning in these contexts.

Table 1. Chapters in the design and teaching section

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<th>Chapters</th>
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This bibliographic essay explores the literature related to design and teaching in distance education as presented in the 3rd section of Moore’s (2007) *Handbook of Distance Education* (Table 1 provides an overview of all the chapters in the Design and Teaching section of the Handbook).

We started our review by reading all of the chapters in the section. Our analysis began with the identification of themes. After comparing our individual analyses, we narrowed the list of themes to seven: interact, assess, scaffolding, transactional distance, learner, roles, authentic. Our next step was to identify the key resources within each theme. We created a spreadsheet to capture all of the unique references (n=528) in the Design and Teaching section of the Handbook. We then identified the references that coordinated with each of the major themes. Finally, we identified the resources that were cited multiples times (i.e., cited in at least two chapters) in the section, making it a *key resource*.

It should be noted that there are limitations to this essay. The themes are based on our reading of the chapters in the Design and Teaching section of the Handbook. We did not look to other literature to inform our major categories. Another limitation relates to the number of references we had for consideration. While 528 may seem like a significant number, a quick search in a more comprehensive database like ERIC reveals that much more literature is available for each of our themes (e.g., *scaffolding* is a keyword in 1466 articles in ERIC).

While there are limitations, we feel that the results of our analysis indicates a few core references that readers can turn to as they begin their exploration of a particular topic. We have organized the essay by major themes. Within each theme we provide a description of the theme, and an overview of the references cited in the chapter. We end each theme section with a discussion of key resources related to the theme.

**Interact/interaction**

*Interact* was a major theme in the Design and Teaching section. Our analysis indicated 111 references related to *interact* or a related term, *interaction*. The theme was present throughout the section, with references in all of the chapters, 18-27.

*Interact or interaction* refers to the ways in which communication is engaged within a distance education context (Shearer, 2007, chapter 18). Several perspectives on *interact/interaction* are represented in the section. For example, Shearer points out that interaction is much more than just verbal communication, citing Moore’s (1989) distinctions of learner-learner interaction, learner-interface, and dialogue. Bonk and Dennen (2007, chapter 19) talk extensively about interaction within their frameworks for design and teaching, providing frameworks for enhancing and extending interaction, particularly learner-instructor and learner-learner. Other authors describe interaction within the context of design (e.g., Naidu, 2007, chapter 20; Sharma *et al*., 2007, chapter 21; Moisey and Ally, 2007, chapter 26), stating the importance of creating
opportunities for interaction during the design of the learning environment. The types of interaction (e.g., peer, instructor, resource) and the types of environments in which they occur was also noted in the section (e.g., Hill et al., 2007, chapter 22; Anderson and Kuskis, 2007, chapter 24). The opportunities afforded for interaction in online environments was a focal point in Davis’ (2007) chapter 23. Sammons (2007, chapter 25) highlighted the message that interaction does not just happen; rather it is generated and facilitated. Dede et al., (2007, chapter 27) closed the section with a discussion of mediated interaction and the expectations of neomillenials.

A common theme cutting across all the chapters is the importance of interaction in online learning. Being attentive to the different types of interaction and how to engage learners was particularly highlighted in the section.

There were three key resources in the Design and Teaching section of the Handbook related to interact/interaction: Garrison and Baynton (1989), Garrison and Cleveland-Innes (2005), and Moore (1989). Garrison and Baynton explore interaction in terms of who is controlling the experience. Garrison and Cleveland-Innes link into another theme of presence as they discuss how to facilitate cognitive presence in online learning. Moore describes three types of interaction and how those can be used effectively in distance education contexts. Each resource provides insight into the importance of interaction in distance education (see Table 2 for a summary of the key ideas and resources).

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<th>Key ideas</th>
<th>Resources</th>
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Assessment

The topic of assessment was a common theme throughout the Design and Teaching section of the Handbook. In fact, nine of the ten chapters addressed the
topic of assessment either in a broad sense, or to refer to specific types of assessment.

Assessment is often seen as the primary means for both educators and learners to gauge whether learning has happened. Sharma, Oliver, and Hannafin (2007, chapter 21) discuss different types of assessment, from more traditional quizzes, exams, tests, papers, and projects (Mason, Pegler, and Weller, 2004), to alternative assessments such as portfolios, discussions, concept maps, reflections, and field experiences (Benson, 2003).

Regardless of format, several forms of assessment were considered as ways to provide formative feedback. Four chapters (20, 21, 22, 23) discuss self-assessment and tools that are used to scaffold and improve the learners’ proficiency by reflecting on his or her own learning. Peer-assessment is also discussed (chapters 21, 22, 27) as a way for learners to benefit from the feedback and reactions of their peers. Both self- and peer-assessments give learners the opportunity to reflect upon and adjust their understandings during the process of learning.

Authentic assessment, where scenarios or real situations are identified to give learners a problem or condition that mirrors real-world application, are discussed in chapters 20 (Naidu, 2007) and 22 (Hill et al., 2007). Examples of authentic assessment are scenario-based learning (Naidu, Menon, Gunawardena, Lekamge, and Karunanayaka, 2005), and problem-based learning (Barrows 1994; Barrows and Tamblyn 1980; Schmidt 1983).

Table 3. Key ideas and resources for assessment

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There was one key resource with regards to assessment, and this was Mason, Pegler, and Weller (2004). Both chapters (21, 22) that reference this article do so to cite the authors’ examples of typical assessment formats. Mason et al., found that students used artifacts from various courses to build authentic and meaningful e-portfolios (see Table 3 for a summary of key ideas and resources).

Scaffolds

Chapters 20, 21, 22, 25 and 26 of the Handbook all delve into the concept of scaffolds. Although discussed in various ways, scaffolding was consistently presented as an important element to support student learning in distance education.
Scaffold is a metaphor used to describe a process or tool that helps learners achieve what they could not unaided (Azevedo and Hadwin, 2005; Pea, 2004; Wood, Bruner and Ross, 1976). Scaffolds provide support as needed, meaning they are adjusted and faded once needs change. Simply stated, effective scaffolds support learners at the right place and time, in the right way (Naidu, 2007, chapter 20). Because of this inherent flexibility, there is no singular way to scaffold. Scaffolds may be hard (technology-based) or soft (human) (Sharma and Hannafin, 2007), and may support learners with procedural, conceptual, metacognitive, or strategic processes (Hill and Hannafin, 2001; Muirhead and Juwah, 2004).

Although they are often associated with constructivist principles, scaffolds can be implemented in both constructivist and objectivist learning environments (see Sharma, Oliver and Hannafin, 2007, chapter 21; Hill et al., 2007, chapter 22). In distance education, scaffolds can help learners to master content, meet personal learning goals, maintain focus and sense of location in hypertext environments, and interact collaboratively with peers and experts across time and/or space.

There were no duplicates among the citations on scaffolds, although Wood, Bruner and Ross’ 1976 work is widely regarded as one of the foundational pieces on scaffolding. We think this lack of overlap stems, in part, from the diversity of purposes and ways to scaffold. As Sammons (2007, chapter 25) mentioned, scaffolding is contingent on the circumstances and conditions. Distance learning environments can be structured to scaffold content mastery, conceptual understanding, navigational practices, thinking and reflection, or relationships. The authors who discussed scaffolds pointed to empirical or theoretical research about the way scaffolds were used or conceptualized in a particular instance, rather than scaffolding as a general concept.

Transactional distance

While the theory of transactional distance is discussed at length in Moore’s chapter 8 in the Handbook (Moore, 2007), it is also a theme in the Design and Teaching section, along with similar terms such as transactional presence and social presence, in chapters 18, 19, 21, 22, 23, 24, and 25.

In distance education, transactional distance refers to the interplay between dialogue (communication between learner and instructor), structure (amount of control learner has on structure of course, assignments, outcomes), and learner autonomy (Moore 1980). Each of these elements interact to effect transactional distance. For example, Moore proposed that as dialogue increases, transactional distance decreases; as structure increases, transactional distance also increases.

To look at it from a different perspective, Sammons (2007, chapter 25) discusses Shin’s (2003) theory of transactional presence, which describes the extent to which learners feel connected to others (e.g. instructor, other students). In either case, the
important aspect, as described by Shearer (2007, chapter 18), is the perceived “psychological separation of the learner from the instructor” (p. 220). This is also referred to as the idea of social presence, where the emphasis is on how “real” the person with whom the learner is interacting is perceived to be (Shin, 2003).

There was one key resource in this section of the *Handbook* with regards to transactional distance, and this was Richardson and Swan (2003). Both times it was referenced (chapters 23 and 25) was to present the results of their study that concluded that students who perceived more social presence in their courses reported more satisfaction with their experience, felt they learned more, and had higher opinions of their teachers (see Table 4 for a summary of key ideas and resources).

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**Learners**

Almost all the authors in this section of the Handbook mention learners in some respect, but Bonk and Dennen (2007), Naidu (2007), and Dede, *et al.*, (2007; chapters 19, 20, and 27) delved most deeply into learner characteristics. Online distance education provides learning opportunities to a wide range of people, resulting in a complex tapestry of characteristics that must be considered.

Not only do designers consider learning styles, cognitive variability and motivation, but learner age, employment and family structures must also be taken into account (Moore, 1987; also see Hill *et al.*, 2007, chapter 22 for discussion). Bonk and Cummings (1998) suggest several frameworks that link APA learner-centered psychological principles to guidelines for effective online instruction (see also Bonk and Dennen, 2007, chapter 19). Frameworks such as these highlight the myriad of factors incorporated into effective design. Design is further complicated by the expectations and skills learners bring to distance education from their everyday experiences. Whether a learner finds a given activity valuable or not is impacted by daily interactions with technology and other artifacts (Dede *et al.*, 2007, chapter 27).

Learner autonomy is chief among the distance design considerations. How much or how little structure is appropriate for a given learner to experience success (Shearer, 2007, chapter 18)? Less structure may be suitable for more experienced learners, while more structure is important for novices (Davis, 2007, chapter 23; Jonassen, Mayes and McAleese, 1993). Moreover, learners may need
encouragement in order to feel a sense of community (Anderson and Kuskis, 2007, chapter 24) or support to ensure they are comfortable collaborating with their peers (Liaw and Huang, 2000; Rourke, Anderson, Garrison and Archer, 2001; Sammons, 2007, chapter 25; Sims, 2003).

Garrison and Bayton’s (1989) article was a key resource for learner characteristics. Their work discusses the negotiation necessary to maintain the proper proportions of learner independence, support and power. Considerations include internal factors such as motivation, learning style, attitude and maturity, and external factors like finances, support of family members, and institutional structures. Creating the ideal learning environment involves a nuanced approach to understanding and meeting the needs of diverse learners (see Table 5 for a summary of key ideas and resources).

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**Roles of learner, instructor, design and media**

The role of the learner and instructor was a repeating theme in the Design and Teaching section. Our analysis indicated 15 references related to roles in an online learning environment. The theme was present in five of the ten chapters of the section, including 19-22, 24 and 26.

Role of the learner refers to the actions and/or activities engaged by the learner in an online learning environment. This can range from being a passive recipient of the instruction to being actively involved in the facilitation of the learning environment. Several perspectives on the role of the learner are represented in the section. For example, Bonk and Dennen (2007, chapter 19) advocate giving the learner multiple roles within the context of online discussions (e.g., leader, summarizer). The role of peer support is also important, particularly in the context of online interactions (Hill, 2007, chapter 22). Anderson and Kuskis (2007, chapter 24) discuss ways that the learner can become more engaged in online interactions, taking a more active role in the learning experience.

The role of the instructor can be just as varied as that of the learner, ranging from the “sage on the stage” to a “guide on the side”. Throughout the section the authors...
discuss the role of the instructor, advocating more of a facilitative role, and one that is very active and engaged (Moisey and Ally, 2007, chapter 26). For example, Bonk and Dennen (2007, chapter 19) describe the role of the instructor in the context of online discussions, indicating that it could take on more of an authoritarian model or one that is more informal and spontaneous, thus likely eliciting more interaction from learners. Anderson and Kuskis (2007, chapter 24) describe the important role of the instructor in selecting content, specifically content learning objects. Throughout the section, being active and engaged, whether from the learner or instructor perspective, is a key theme.

Other roles were discussed in the section, including the roles of instructional design and media. The role of media is an important consideration in online learning. For example, Sharma et al., (2007, chapter 21) made reference to the role of discussion boards in online learning. Naidu (2007, chapter 20) talked extensively about the role of instructional design and the need to give careful attention to the design of goals and learning outcomes to build effective environments.

All of the roles discussed above were important element in the text; however, there was only one key resource in the Design and Teaching section of the Handbook related to the roles of the learner and/or instructor: Dennen (2005). The article was discussed in two of the chapters in the section. Bonk and Dennen (2007, chapter 19) cite the article when discussing the role of the learner and instructor. Sharma, Oliver and Hannafin (2007, chapter 21) cite the article in reference to the role of the learner in terms of interaction during asynchronous and synchronous communication (see Table 6 for a summary of key ideas and resources).

Table 6. Key ideas and resources for roles of the learner and/or instructor

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Other key resources related to design and teaching

It is important to note that there were four other noteworthy resources cited in the section. While none were explicitly related to the themes described above, we felt they were worthy of mention due to their prevalent citation across chapters in the section.

Two citations of note are more related to the theoretical and design aspects of online learning. Moore’s 1989 article, Three types of interaction, was frequently cited in the section. His work in the area of interaction has continued since this piece was published. Anyone interested in online learning, particularly in terms of
interaction, should review Moore’s work for his important insights. Schon’s (1983) work on reflection was also cited several times in the section. His book, *The Reflective Practitioner*, is another good resource for online practitioners.

Two other resources related to the implementation of online learning. Salmon’s 2002 book, *E-tivities: The Key to Active Online Learning*, was cited as a source for information on various activities in online environments. Finally, the work of the Cognitive and Technology Group at Vanderbilt (CTGV) was cited in terms of anchored instruction and situated cognition. While no one resource was highlighted, the cross section reference to their work makes it an important consideration for those exploring online learning environments (see The Cognitive and Technology Group at Vanderbilt, 1990, 1991, 1993).

**Conclusion**

The section on Design and Teaching in the *Handbook of Distance Education* is filled with research and scholarship related to design and teaching for distance environments. We identified seven major themes in the chapter – interact, assess, scaffolding, transactional distance, learner, roles, authentic – and presented the key resources related to each of these areas. We also presented other key resources related to online learning that were present in the section.

Our review of the section clearly indicated that there is a considerable body of knowledge about distance education, it is wide ranging and covers a considerable breadth. That said, there is a need to develop more depth in what we know about the various aspects of learning in online environments. We need to continue our exploration of online learning within the themes we identified as well as other key areas. Online learning will no doubt remain an important area of research for years to come.

**References**


