GROUNDED DESIGNS FOR ONLINE AND HYBRID LEARNING SERIES

GROUNDED DESIGNS FOR ONLINE AND HYBRID LEARNING

DESIGN FUNDAMENTALS

EDITED BY ATSUSI "2C" HIRUMI

Hawker Brownlow
EDUCATION

Contents

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Appendix

Introduction to the Series

Over the past decade, the number of K–12 students enrolled in an online course has increased exponentially: from 40,000 to 50,000 in 1999–2000 to more than 2 million in 2009–2010 (iNACOL, 2012). All 50 United States and the District of Columbia now offer K–12 students online learning opportunities (Watson, Murin, Vashaw, Gemin, & Rapp, 2010), and it is expected that e-learning in K–12 education will continue to expand over the next decade. Some even suggest that e-learning may encompass half of all of K–12 schools in the United States by the year 2020 (Christensen, Johnson, & Horn, 2011). e-Learning is also expanding outside the United States. As reported by Barbour and Kennedy in Chapter 4 in the third book in the series, *Online and Hybrid Learning Trends and Technologies,* many countries around the world, such as Mexico, Canada, Australia, New Zealand, Singapore, South Korea, and Turkey, are also offering K–12 students a variety of e-learning opportunities. Apparently, e-learning, encompassing both totally online as well as hybrid coursework, is not just another fad; it is now a primary mechanism for education, training, and professional development across the United States and abroad.

The problem is that while technology continues to increase access to learning opportunities, it may not enhance the quality of the learning experience. Let me explain. In business and industry, quality is often measured by the amount of variance demonstrated by a product or service around a set standard: the smaller the variance, the higher the quality; the greater the variance, the lower the quality. High-quality coffee, for example, is served at the same hot temperature with the same rich flavor each time it's served. In contrast, low-quality coffee may be too hot one time, too cold the next, too dark, and then too light, and so on. Let me give you a more technology-related example. Back before personal computers, people sent their newsletters, posters, and brochures to professional print shops for design and production. Then, desktop publishing came along, and many people thought they could generate their own high-quality print materials. Not! Homemade posters, newsletters, and brochures varied greatly in quality because the average person was not professionally trained in areas such as graphic arts, page layout, and copyediting. Technology increased capacity (a lot more people were able to generate print materials) but decreased quality (due to greater variance in the visual appeal and readability of the materials).

A similar phenomenon is occurring with e-learning. Learning management systems, such as Blackboard, Moodle, and Saba, along with software applications, such as Dreamweaver, Captivate, HTML5, and Adobe CS6, are making it easier for people to generate and post online instructional materials to facilitate e-learning, but easier does not mean better. Technology is again increasing capacity (this time with many more people designing and delivering online and hybrid coursework) but may be decreasing the overall quality of the learning experience.

A great deal of variance can be found in the quality of e-learning materials and e-learning experiences now being offered online. Few educators are given the time and training to learn how to use what may be a whole new set of computer applications necessary to facilitate e-learning. Even fewer are given the resources required to rethink their coursework and redesign their instructional materials to facilitate effective e-learning. This explains why many e-learning programs

continue to mimic traditional teacher-directed and correspondence models of distance education. With limited time, training, or resources, educators have little recourse but to continue to do what they know best, which, for the majority, still means using traditional teacher-directed methods. Teacher-directed methods rely heavily on self-instructional text or lecture-based materials, which often fail to promote meaningful interactions among students and between students and the instructor, particularly online.

This three-book series, Grounded Designs for Online and Hybrid Learning, is written primarily for educators and instructional designers creating online and hybrid learning environments. While the examples are primarily geared to K–12 educators, if you teach in a college or university setting or design training programs for business and industry, I think you will find that the fundamental principles and processes covered in these books may also offer valuable insights into the design of online and hybrid learning environments across settings.

The three books in the series are based on three basic premises. To increase quality (reduce variance) and design effective, efficient, and engaging online and hybrid courses, we should (1) ground the designs of our coursework on research and theory; (2) follow a systematic design process to align basic elements of instruction (namely, objectives, assessments, and instructional strategy); and (3) think and, whenever possible, act systemically to ensure that all necessary components of the educational system are aligned and work together to facilitate e-learning.

Grounded Design

Grounded design is defined as "the systematic implementation of processes and procedures that are rooted in established theory and research in human learning" (Hannafin, Hannafin, & Land, 1997, p. 102). Grounded design articulates and aligns theory with practice to optimize learning. Regardless of your underlying educational values and beliefs, grounded design provides a method that you can follow in a variety of settings.

To facilitate the method, Hannifin, et al. (1997) posit four criteria for grounded design:

1. The application of a defensible theoretical framework clearly distinguishable from other perspectives,
2. The use of methods that are consistent with the outcomes of the research conducted,
3. The ability to generalize beyond one particular instructional setting or problem, and
4. Iterative validation through successive implementations.

Adhering to these criteria will give you a solid foundation for designing coursework, as well as improving your methods and materials over time. However, grounding the design of your lessons and coursework does not necessarily guarantee that your students will achieve targeted outcomes in an effective, efficient, and engaging manner. Before and after you design your course to facilitate e-learning, you'll need to complete a number of tasks.

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Systematic Design

To create an online or hybrid learning environment, you may or may not follow a systematic design process. Those who follow a systematic process use the results of one task as input for subsequent tasks. For instance, an educator or instructional designer following a systematic process may use: analyses to identify essential skills and knowledge; the skills and knowledge to generate, cluster, and sequence objectives; the objectives to define and align learner assessments; the objectives and assessments to formulate an instructional strategy; and the strategy to select tools and technologies for facilitating achievement of the objectives.

Systematic design is vital for a number of reasons:

- It provides clear linkages among design tasks. The resulting alignment among instructional objectives, strategies, and assessments is essential for facilitating learning in online, hybrid, as well as conventional classroom learning environments.
- It begins with an analysis of the target learners and desired learning outcomes. Such analyses are necessary for proper planning and decision making. Without it, key instructional components may be missing or misaligned.
- It is based on a combination of practical experience, theory, and research. Key design decisions are informed by what is known about human learning, instruction, and emerging technologies to avoid haphazard investments in unsubstantiated fads or opinions.
- It is empirical and replicable. To increase return on investment, instruction is designed to be used more than once with as many learners as possible. The costs associated with systematic design are worth the investment because the resulting materials are reusable.
- It is generalizable across delivery systems. The resulting materials may be used to support the delivery of instruction in conventional classrooms, hybrid, and totally online learning environments.

There are also a number of limitations associated with systematic design. For instance, systematic design takes time and expertise—vital resources that may be spent on other projects. Educators and instructional designers are rarely given enough time and support to go through the entire systematic design process in a rigorous fashion. Interim products (e.g., paper-based design documents) are not very flashy and may not capture the attention of key stakeholders who are important for supporting you and your efforts.

Many also associate systematic design with ADDIE (analysis, design, development, implementation, and evaluation), a well-known model for producing training and educational programs. ADDIE has been used successfully by the military and corporations across the United States and around the world for decades. Variations of ADDIE (e.g., Dick, Carey, & Carey, 2009; Smith & Ragan, 1999) continue to be adopted by educators and instructional designers to produce training and educational programs in a systematic fashion for the reasons mentioned earlier. Critics of ADDIE, however, now argue that it is too linear, too time consuming, too resource intensive, and too inflexible, and that it fails to accommodate changes in learner needs and instructional materials during development and delivery. Critics also point to poorly designed instructional

materials, said to be based on the ADDIE process, that are ineffective, inefficient, and not engaging. Yet, experienced instructional designers realize that more often than not, ineffective, inefficient, and unappealing instruction and instructional materials result from inappropriate or inadequate applications of ADDIE (e.g., people cutting corners due to the lack of time, training, or resources) rather than inherent problems with the model itself. ADDIE also does not have to be applied in a linear fashion, which is a common myth; spiral and other iterative models of ADDIE are widespread.

Experts now advocate agile approaches to design, such as the successive approximation model (SAM) that further accentuates the iterative and collaborative nature of design (Allen, 2012). Figure I.1 depicts what Allen refers to as the extended successive approximation model (SAM2) for projects that require significant content or e-learning development and more advanced programming.

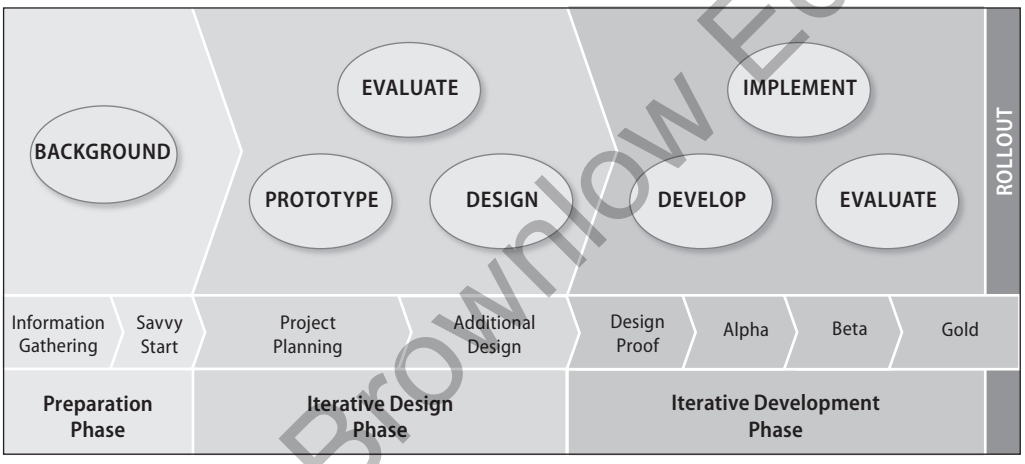

FIGURE I.1 ▶ The three-phase extended successive approximation model or SAM2 *(This figure is reprinted from Allen, 2012, with permission from ASTD Press.)*

Whether you use ADDIE, SAM, or other processes, it is important to keep in mind that a singular focus on generating tangible products, without sufficient planning or testing, may result in a false sense of economy. The impact of poorly designed instruction may not be evident until would-be learners are asked to perform key tasks for which they are not prepared. Dissatisfied learners may drop out and warn others to avoid your program. The bottom line is that you should use a process that ensures the alignment of objectives, assessment, and instructional strategies and leads to the development of instructional materials that consistently result in desired learning outcomes on time and within budget. Systematic design (as discussed in this book and advocated in the second and third books in this series, *Online and Hybrid Learning Designs in Action* and *Online and Hybrid Learning Trends and Technologies*) helps ensure alignment of fundamental instructional elements and reduces variance without inhibiting creativity if applied in an appropriate manner. Nevertheless, grounded and systematic design may still not be sufficient for ensuring that your students achieve targeted learning outcomes.

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Systemic Thinking and Action

Well-designed instructional materials and coursework are essential but not necessarily sufficient for facilitating e-learning. In an online environment, an instructor may not be readily available to fill in gaps and make up for inadequacies in the instructional materials. Students may not be able to drop what they are doing and see an advisor to address a logistical issue. If any students cannot readily register for and access coursework, acquire materials, submit assignments, obtain feedback, see an advisor, access technical support, and otherwise navigate the training or educational system, it doesn't matter how good the instruction, these students may not learn. In fact, students have told me that they would prefer online programs with high-quality student services and mediocre course materials than programs with mediocre student services and high-quality coursework.

Systematic design is not sufficient for establishing effective and efficient online and hybrid programs. You must also think systemically; in other words, you must view e-learning as part of a larger system that consists of a set of interrelated components that must all be aligned to achieve a common goal. Figure I.2 depicts nine functional components of an e-learning system that must work together to facilitate student achievement (Hirumi, 2000, 2010; Harmon & Hirumi, 1996; Hirumi & Harmon, 1995). It further highlights three key components of the system addressed directly by this book series: instruction, curriculum, and assessment.

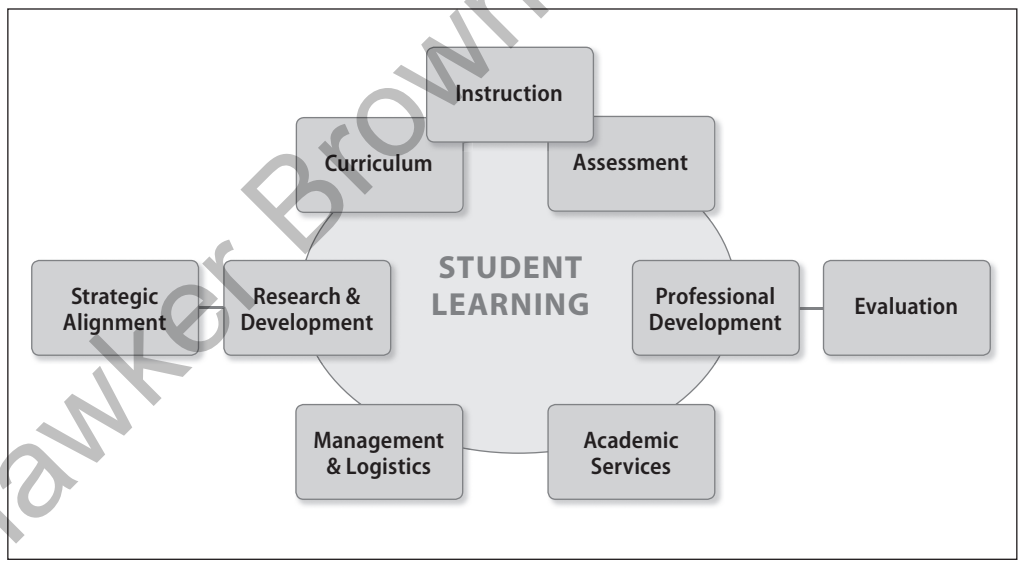

FIGURE I.2 ▶ Functional components of an e-learning system

The nine functional components are (1) strategic alignment, which aligns the mission, strategic plans, and tactical plans of the e-learning system with the mission and strategic plans of the larger educational institution, organization, or system; (2) research and development, which facilitates the integration as well as the dissemination of new knowledge and information generated outside and within the system; (3) curriculum, which specifies and organizes learning outcomes; (4) instruction, which guides the deliberate arrangement of events, including tools and techniques,

for facilitating achievement of specified learning outcomes; (5) assessment, which defines the methods and criteria for determining whether students achieve the curriculum outcomes; (6) management and logistics, which bring together the human and physical resources necessary to support the system, including plans, policies, procedures, and budgets; (7) academic services, which cover a wide range of support for students, such as (but not limited to), admissions, registration, fee payment, financial aid, and academic advising; (8) professional development, which ensures all system stakeholders have the skills and knowledge necessary to fulfill their roles and responsibilities; and (9) evaluation, which aggregates assessment data and gathers additional information to improve the effectiveness and efficiency of the overall system and its components. Addressing each system component in detail is well beyond the scope of this book series. Rather, the three books in this series focus on the instructional components of the system, covering different instructional strategies, tools, and techniques for facilitating e-learning, which, in turn, necessitate some discussion of curriculum and assessment.

Contents and Organization

Based on the three basic premises listed in the first section of this Introduction, I wrote and solicited chapters from practitioners in the field and organized the chapters into three books to help you ground the design of your online and hybrid learning environments. This, the first book in the series, *Online and Hybrid Learning Design Fundamentals,* covers basic tasks and a systematic process for designing high-quality online and hybrid coursework. In Chapter 1, I bring to light the importance of defining objectives and aligning learner assessments to the objectives as key precursors to grounded design. Then, in Chapter 2, I present a framework for designing and sequencing meaningful e-learning interactions and posit five steps for grounding the design of your instruction in research and theory. Next, I asked Damon Regan to write Chapter 3 to help you reduce production time and cost by introducing you to vast, searchable repositories of content information and sharable content objects for existing instructional materials that may help you bring your designs to life. Chapter 4 considers the various technologies you may use and integrate to facilitate the delivery of your course. Here, Jana Willis distinguishes the application of Web 2.0 from prior technologies and touches on emerging applications for facilitating e-learning. The book then turns its attention to students. In Chapter 5, Ryan Watkins and Mike Corry discuss what it takes to prepare students for success in online learning environments. Carrie Straub and Tracy McKinney then interpret laws that govern the education of students with special needs and provide examples of how online instruction can be universally designed, using the Web Accessibility Initiative guidelines in Chapter 6. Rhonda Atkinson and Tom Atkinson conclude our treatment of design fundamentals in Chapter 7 by discussing how e-learning meets ISTE's NETS for teachers and students and how quality guidelines for distance learning can further optimize your time and effort.

As I applied the systematic design process characterized in this book, I learned that it is difficult to design different types of learning environments if you haven't seen or experienced one yourself. The second book in the series, *Online and Hybrid Learning Designs in Action,* illustrates how you can apply eight different instructional strategies—based on cognitive information processing, inquiry, experiential, and game-based theories of teaching and learning—to ground the designs of

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