

Learning by Doing, A Comprehensive Guide to Simulations, Computer Games, and Pedagogy in e-Learning and other Educational Experiences, 2005. Clark Aldrich. John Wiley & Sons. 400 pages. ISBN: 0787977357.

Reviewed by Katrin Becker

Time's up. Rules change. The generation of people who have grown up with games have also grown up with a pastime that is more engaging and more interactive than any form of communication media before. Not entirely by coincidence, the fields of education and training have entered a period of rapid development, in which both the expectations of and possibilities for the application of new knowledge and technologies to learning experiences are advancing almost daily, and simulations are poised to play a major role.

The phrase "learning by doing" has been known for many years, and the virtues of situated learning are now well accepted. What Clark Aldrich has done in his 2005 book, is apply what we know about situated learning to interactive multimedia environments or, more precisely, simulations. This book examines educational simulations, defined as "a variety of selectively interactive, selectively representational environments that can provide highly effective learning experiences" (p.270).

Clark Aldrich tackles the *who, what, where, when* and *why* of educational experiences that involve the use of computer simulations and games. His style is humorous, highly accessible, yet absolutely to the point. For some types of learning, computer games and simulations are clearly the best approach we have available. Simulations can be a key (perhaps even *the* key) ingredient in the transformation of all learning from the more formal and prescribed models of the 20th century, to the individualized, engaging experiences of the 21st century. This book is targeted at educators who are interested in learning more about how to choose and use these kinds of applications, and what they can expect to gain from them.

Aldrich has the credential of having created a critically acclaimed, commercially successful learning game/sim, namely SimuLearn's Virtual Leader, which was awarded Best Online Product of the Year by the Training Media Review in *Training and Development Magazine*, 2004. He has worked as an analyst for Gartner, an organization that analyzes information technology markets. Further, his first book, *Simulations and The Future of Learning*, has been extremely well-received and highly praised.

Learning By Doing is organized into five main sections, and provides readers with not so much a "how-to" as a "what-is". It begins with excerpts of interviews with three prominent games designers that serve to introduce the main focus of the book, namely the use of educational simulations, and help

peak the reader's interest.

The first section describes the four main genres of traditional simulations, according to Aldrich. One genre is labelled *branching stories*, which allow learners to make multiple-choice decisions along an ongoing sequence of events. Next we have *interactive spreadsheets*, which generally focus on business issues using a turn-based approach where learners fill in various blanks and see the results of their decisions. Third, Aldrich describes what he calls *game based learning*, which in this volume means the use of familiar entertainment (i.e., traditional) games that have embedded educational content. Although some will find this definition somewhat narrow, it serves to distinguish this type of game from those described later in the book. The fourth category is that of *virtual products and virtual labs*, which refers to on-screen representations of objects and software that allow interaction.

Section two examines the broader opportunities of simulations, beginning with several ways that they can be categorized and mapped out. According to Aldrich, there are two major dichotomies in simulations: *stand-alone versus instructor supported simulations*, and two kinds of learning: *learning that involves linear skills versus dynamic skills*. When these are mapped out together, we get four quadrants, each of which identifies specific kinds of learning environments, each suited to different applications. Each of the simulation genres is then related to this perspective. The book goes on to explain three types of content: *linear content*, which is roughly equivalent to fact-based knowledge; *systems content*, defined as complex, interleaved relationships (like relationships); and *cyclical content*, which deals with activities that can be combined to create outcomes (these are processes). The three classifications of design elements, namely simulation, game, and pedagogical elements, interact to create the learner's experience. The remainder and bulk of the section, discusses role-play in all its various incarnations, from live real-time and in person, to fully digital immersive role-playing experiences. The relative applications, pitfalls and benefits of each of these are outlined in a light-hearted way, full of real examples.

Section three describes what the near future simulations are going to have to offer by looking at two existing examples. *First Flight – The Wright Experience Flight Simulator*, and *Virtual University*. The former is a historically and aerodynamically accurate simulation of several of the planes built by the Wright Brothers. The latter is a complex simulation of a university, complete with administrative and financial issues. Both are large-scale developments of the sort that has the potential to radically change how we will come to view education.

The second last section gets to the nuts and bolts of when to use simulations, what kinds are appropriate for what kinds of applications, how to select them, conduct needs analyses, and finally what must be considered during the design. Finally, section five contains the appendices, which continue to offer further explanations and ideas for the development and use of simulations of all sorts.

One of the few drawbacks of this book is that while the work of other experts in the field is used and clearly acknowledged, it does not contain many formal references to other works within the text. While this should not diminish the validity of what is said, it does blur the lines between which ideas and conclusions are the result of scholarly research and which are the result of both practical and anecdotal evidence. For someone interested in familiarizing oneself with the simulation landscape and its possibilities, this criticism will prove unimportant. It is clear from the writing that Aldrich has researched widely and deeply, and that he brings a great deal of practical experience to the table, but from the perspective of a student or researcher trying to familiarize oneself with the field, the relative lack of references makes it difficult to use this book as an entry point into the literature.

While this reviewer may not agree with all of the author's claims and classifications, the approach is highly serviceable for anyone attempting to understand more about how simulations, both large and small, can be made to fit into the instructional technology landscape. The book is enjoyable to read and entertaining, yet still able to deliver a serious message. The chapters are short for the most part, each with a distinct message. They are easy to digest, filled with real examples and short lists. Each chapter ends with a brief "teaser" for what's to come. Numerous chapters contain further resources and references at the end, and Aldrich freely credits the work of others by name in the body of the text.

As Aldrich himself says,

Corporations, universities, even countries are starting to shift their perspectives. ... Ever so slightly, I have seen the conversations move, from a point where this kind of thinking is impossible, to where it is beginning to seem inevitable. What we think of as content, education, and training is finally, and permanently, changing.

Breaking down the artificial barriers between what we learn and what we do, between business and academics, and between understanding history and controlling our future, simulation development will be a defining 21st century industry. (p.277)

While the message of the importance of digital simulations is clear in this book, it provides an extremely well-balanced treatment, drawing on both digital and traditional examples to show how this approach to learning by doing can be immersive, engaging, and highly transformative. If you were to read only one book on the educational applications and potential of modern simulations and games, this should be the one.

Reviewer

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