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Encyclopedia of the Sciences of Learning [book review]

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Seel, Norbert M. *Encyclopedia of the Sciences of Learning*. New York: Springer, 2012. Web. 23 April 2012.

The *Encyclopedia of the Sciences of Learning* is the first major reference work in the growing and highly visible field of learning sciences. It brings together definitional entries from scholars who represent the breath of this interdisciplinary area of study, teaching, and practice: biology, neuroscience, psychology, computer and information science, philosophy, anthropology, sociology, education, and a range of narrower technical and applied fields. Given the increasing amount of scholarly and popular attention to the dimensions and questions of human learning, it's important to note that this encyclopedia devotes equal time to animal and machine learning as well; this is a significant difference that sets it apart from previously-published reference works on educational psychology. It also maintains an international sensibility in terms of contributors and topics and aims for an objective tone overall. Where it addresses specific institutions, politics and cultures of learning, it does so primarily to contextualize a specific learning behavior, process, method, theory, or concept.

Almost all entries include the following components: a list of synonyms, an extensive definition, theoretical background, ongoing and open research questions, "see also" entries, and a list of references. This structure accomplishes two main things: 1) it unites a very diverse collection of terms and concepts, most of which are defined in field-specific language and contexts; and 2) it provides an explicitly scholarly approach, especially in the provision of theoretical background and current research questions. Entries are not written in order to smooth out disciplinary differences or minimize jargon; rather, the specifics of each subject remain intact. Thus the interdisciplinarity of the work is in the selection of entries and use of cross-references, not within the entries themselves. Of course, given usefulness of cross-references and synonyms in a work like this, it's unfortunate that those terms are not hyperlinked to enhance the work's accessibility. There are a handful of biographical entries on foundational (mainly Western) educational thinkers, philosophers, psychologists, and other scientists, and also twenty entries defined as "fundamental" or "overview" chapters. These are entries on overarching themes or approaches, such as "Learning Technology," "Assessment in Learning," and "Animal Intelligence."

There are a few growing pains to be worked out in terms of formatting and navigation, at least with the ebook version. For example, searching is full-text and results are displayed at the sentence level for context; this makes it difficult to know which, if any, results are for head entries, and for many searches there will be dozens of pages of results. In addition, as with any subject-specific reference work, users will need some familiarity with the topics in order to understand the entries, or even search for them effectively. In addition, there's the added dimension of addressing animal, human, and machine learning theories and processes all in one volume; similar vocabulary in different fields will lead to divergent entries. For example, a search for "tutoring," while admittedly broad, returns results on "Intelligent Tutoring Systems" and "Peer Learning and Assessment," among others. Entries are listed alphabetically, though the easiest way to view all entries is to look at the page titled "Book back matter," which turns out to be a list of entries and page numbers (not immediately obvious). As with other ebooks, the Springer platform offers tools for note taking, bookmarking, highlighting, etc.

Even though this encyclopedia has some formatting and navigational shortcomings as an ebook, it is an essential source for anyone engaged in the study of learning theories, concepts, and processes. As the first major reference work in its field, the *Encyclopedia of the Sciences of Learning* is recommended for academic libraries with advanced undergraduates, graduate students, practitioners, and faculty actively involved in disciplines relevant to the learning sciences.