

Book review

Meaningful learning with technology

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Howland, J. L., Jonassen, D., & Marra R. M. (2012). *Meaningful learning with technology* (4th ed.). Columbus, OH: Merrill/Prentice-Hall (pp. xv, 292).

Despite the growth of the use of information and communication technologies by educational providers around the world and the potential of digital technologies to revolutionise education in the 21st century, ICTs in the classroom are often used as a way to sustain traditional teaching and learning. With the increased availability of digital devices, open source and easily accessible online tools, it becomes critical to approach the use of new technologies in the classroom from a pedagogical, rather than a technical point of view. In New Zealand in particular, the need for teachers' professional development regarding the pedagogically sound use of technologies in the classroom is even greater with the rollout of Ultra Fast Broadband in schools, which is expected to further encourage the uptake of technology-enhanced teaching and learning with online or blended approaches.

Meaningful Learning with Technology has a promising title that directly conveys the book's focus on the use of technology in the classroom—not as an end in itself, but as a way to promote meaningful learning for students—and it builds the reader's expectations for a rewarding reading experience. Underpinned by constructivist learning theory, the book discusses, in 10 coherently written and structured chapters, the role of technology in fostering meaningful learning through a range of processes.

In the preface, the authors provide a comprehensive background on the book's epistemological underpinnings. Meaningful learning is directly linked to knowledge construction, and the need to challenge traditional ideas about education and schooling is discussed briefly. The authors indicate that “[u]sing technologies to engage meaningful learning assumes that our conceptions of education will change, that schools or classrooms (at least those that use technologies in the way that we describe) will rethink the educational process” (p.xii). The main purpose of the book, which is communicated clearly, is to encourage its readers (mainly professionals in school contexts) to change their traditional ideas of education and to understand how technologies can “catalyze that change and support it if it comes” (p.xii). The authors explain briefly how traditional teacher and student roles are challenged, preparing the reader for the conceptual change the book is aiming for.

Chapter 1 provides a more detailed description of the characteristics of meaningful learning, including active, constructive, collaborative, authentic, and intentional learning. These characteristics are used in the following chapters as a basis to assess meaningful learning through a range of learning processes. The differences between learning from and learning with technology are emphasised, resolving any misconceptions about the role of technology, which is often overstated. The authors acknowledge the potential of ICT to support knowledge construction, access to information, authentic, social, and reflective learning. They present the International Society for Technology in Education

(ISTE), National Education Technology Standards (NETS), and the Elements of the 21st Century Skills Framework, which were developed to help teachers and other educational stakeholders to enable and assess meaningful learning. In discussing the effectiveness of another framework to assess teaching and learning with technology (the Technological Pedagogical Content Knowledge [TPACK] model), the authors argue that teaching with technology is another pedagogical approach. On that basis, the authors question whether technological knowledge and pedagogical knowledge should be considered to be two different dimensions. They introduce the ‘learning knowledge’ dimension, explaining that knowledge of what and how students should learn is “the most important factor in deciding what and how you should teach” (p.16). This assumption, which underpins this book, is identified as one of the major differences between this and other books that focus on teaching with technology.

Chapters 2 to 10 focus on specific learning processes that can be enhanced by using technologies to foster meaningful learning. In particular, the authors describe how technologies can enhance learning through inquiring, experimenting, designing, communicating, community building and collaborating, writing, modelling, and visualising, as well as the role of technology in assessing meaningful learning. The skills that students develop throughout these learning processes with the use of technologies have a central role in each chapter. A wide range of ICT tools are introduced and enriched with examples of implementation in primary and secondary classrooms. Where relevant, the authors refer to implications of the use of several technologies, further stimulating readers’ reflection on the roles–responsibilities of teachers and students. At the end of each of these chapters there is a list of specific NET Standards and 21st century skills that can be engaged by the suggested activities. Each chapter concludes with a set of questions that enhance the reader’s reflection on the role of the teachers and the implications and effective implementation of technology to enhance specific processes related to meaningful learning.

Between Chapters 2 to 10, I found chapters 5 and 6 very useful and timely, as they explore the social aspects of learning with technology. Teachers’ need for adequate professional development regarding the meaningful use of technologies to enhance communication, collaboration, and community building becomes critical at a time when access to Web 2.0 tools and social software have changed the way people use the internet, providing increased opportunities for networked learning. In these chapters, the authors emphasise the reasons why technology-enhanced communication and collaboration in today’s schools is important, referring to students’ increased access and engagement with online communication in their everyday lives, and drawing on relevant research. However, the authors’ argument that “K–12 students are an information-inundated generation and are used to communication that is ubiquitous and instantaneous” (p. 92) should be taken cautiously depending on the context, given the differences in students’ access to technology across various countries (Shewbridge, Ikeda & Schleicher, 2006).

Chapters 5 and 6 both provide examples of a wide range of technologies that can enhance communication and collaboration, especially Web 2.0 tools (e.g., discussion boards, instant messaging tools, social presentation tools, podcasts, wikis, social networking tools, online community websites) that can enhance exchange of ideas,

argumentation, community building, and connections beyond the school walls. The authors share best practices in using some of these tools in ways that enhance meaningful learning, based on relevant research, and provide examples from educational practice, with additional links for further reference. They provide a wide range of ideas for primary and secondary school class projects that use tools such as virtual field trips and multi-school projects through video conference, and collaborative writing with wikis. Readers' reflection on possible implications of online communication and collaboration is further stimulated through discussions on aspects such as licensing issues with content sharing, effective moderation of online discussions, online safety, and information accuracy.

Looking into the future in the concluding chapter, the authors emphasise the purpose of the book—to provide ways that can engage and support meaningful learning:

We have offered examples of how to use technologies to engage meaningful learning. Our purpose was not to show you how to use these technologies [...]. Our goal is that you generalize the ideas we present to your teaching and learning situations, rather than replicate the activity (p. 272).

However, they often provide more detailed technical descriptions of the use of specific tools, perhaps in an effort to highlight the ease of use of these tools and to increase teachers' confidence in using and managing new technologies. I found this at times unnecessary, since the technical use of ICTs is clearly beyond the scope of the book.

The concluding chapter also prompts discussion on the exciting potential of new technologies to enhance community building and collaboration, not only among students, but also among teachers. It provides a list of criteria for meaningful use of technologies, as well as an appendix that includes rubrics to assess the characteristics of meaningful learning (active, constructive, intentional, authentic, and cooperative learning), further stimulating educators' reflection and providing them with practical tools to plan, implement, and evaluate teaching practice.

Overall, I found that *Meaningful Learning with Technology* can increase readers' understanding of the ways technology can be used to engage and support meaningful learning. It also stimulates further reflection and discussion on the roles and responsibilities of teachers and students, as well as on the role of technology in various learning processes, actively engaging readers in construction of further knowledge individually or collaboratively. The book would be a valuable resource for in-service and pre-service teachers in the primary and secondary education sector if used to inform teachers' planning, implementation and evaluation of use of technologies in their classes. Most importantly, it would contribute to teachers' capacity building regarding the use of technologies in the classroom, as well as conceptual change towards the role of education and schooling in the 21st century.

References

Shewbridge, C., Ikeda, M., & Schleicher, A. (2006). *Are students ready for a technology-rich world?: What PISA studies tell us*. Paris: OECD.