

# Preface

Digital technology and learning processes have become interrelated entities. Entities that, in principle, through the interconnectivity of their relationships, give birth to a new phenomenon: “Learning-through and with digital technology.” As relatively new as it is, our expectations, over the years, to the qualitative potential of this phenomenon for education have been high (Collis, 1996; Harasim, Hiltz, Teles, & Turoff, 1995; Mason, 1998; Sorensen & Takle, 2002). In contrast, the fact that we still identify and name it by its separate titles suggests that our understanding of its nature is still evolving, and much research on practice and implementation in education indicates that digital technology and learning, within pedagogical design and delivery, in many cases, are perceived and treated as the two, separate, constituting entities. Regardless of our ability to grasp the interwoven nature of this new phenomenon, learning today, through, and with, digital technology, is the new global reality, and it is offering us an entirely new educational paradigm. As time progresses, researchers and practitioners, from each of their perspectives, are still struggling to grasp and understand the implications for education, and mobilise — in holistic and integrated ways—the latent potential of the new educational paradigm, in order to enhance and make processes of learning through technology genuine, joyful, meaningful, social, and engaging.

The new paradigm imposes global challenges to education, at both macro- and microlevels. At a macrolevel, the challenges to be faced are broad and include digital divides, illiteracy, political challenges, and intercultural diversity (Brown & Davis, 2004), just to mention a few. In a microperspective, in the context of

formal education, the alternative nature of this paradigm requires both technological skills, and innovative pedagogical-methodological innovations and “re-imaginings” (Gibson, 2005) on behalf of teachers and learners. But such must be born and tied from a perspective of what constitutes learning as a genuine, joyful, social, and engaging endeavour, and in a confrontation with the complex challenges of the new educational paradigm.

For more than 2 decades, the potential of this new paradigm for education has been researched, practiced, praised, and scorned. It has been offered to us, challenged us as educators and educational designers, and presented its invitation to us for educational innovation and change. The challenge has been widely accepted and taken up, and many experiments and experiences aiming at utilizing the new paradigm for teaching and learning processes have been made, some more successfully than others (Bates, 1999; Collis, 1996; Collis, 2001; Miyake & Koschmann, 2002). The vast majority, however, have not necessarily achieved their goal to actually “enhance” learning and the quality of the learning process, viewed from the perspective of the learner. Utilizing the potential of the new paradigm for learning, and cultivating learning processes of “good” quality, remains a controversial issue.

In the latter part of the twentieth century, much debate emerged concerning the definition, vision, reality, and functionality of the term technology. To this present day, the *Oxford Encyclopaedic English Dictionary* (1991) defines technology as being “the study or use of the mechanical arts and applied sciences”: a rather narrow and tunnelled definition of what society today perceives and envisions “technology” to be. One would be safe to say that citizens worldwide encamped in mainly one of four areas: those who regarded technology as the single greatest “medium” and “tool” of future possibility for society as a whole; those who held that technology, no matter how one defined it, would be the “damnation” of both humanity and society; those who remained on the sidelines, at times oblivious to what was taking place around them; and, finally, those who really did not care one way or the other. With the dot.com boom came a belief that “technology” was the tool through which all citizens of the world, and global economies, would be enhanced to levels that would benefit both developed and developing societies. Life would be easier, computers would make our quality of life better, fortunes would be made and lost, and people, in general, would have more quality time at home and at play. The personal computer, and its associate peripherals, infiltrated millions of homes, schools, offices, and institutions, and with the birth of the “Internet” came a new dawn: a dawn of synchronous and asynchronous access, and sharing without barriers and distance. The future looked wonderful, and governments implemented plans to plough millions of pounds, dollars, and Euros into educational institutions in the belief that the hardware would change the work practices and processes at all levels within society. Now, as we enter the early days of the 21<sup>st</sup> century, technology, as we know it, is without boundaries. The possibilities are vast, and

the definitions are so varied that it would be suicidal to attempt to confine the term “technology” to just any one practice or meaning.

Which theoretical horizons does research, so far, suggest as having proved generally promising in terms of providing fruitful inspiration and insights, with the aim of “enhancing learning through technology”? While the term “learning,” as well as research in learning, have gone through their stages of evolution, the insights achieved in this respect, for example, within the research fields of both computer-supported collaborative learning (CSCL) (Dillenbourg, Baker, Blaye, & O’Malley, 1995; Koschman, 1996; Miyake & Koschmann, 2002; O’Malley, 1995; Pea, 1996) and open and distance learning (ODL) (Tait, 2003), should be also noted.

In particular, within online and networked learning, the general and widely accepted approaches — as also demonstrated by many of the chapters in this book — are based on principles of collaborative learning (Roberts, 2004; Sorensen, 2004). As emphasized by Roberts (2004), collaborative learning is by no means a new concept. However, within research on collaborative learning, peer interaction, and the perception on its implication for the learning process, differs, and the different views are connected, theoretically, to different learning theorists (Dillenbourg et al., 1995). But whether we adapt a socioconstructivist, a sociocultural, or a shared cognition approach to collaborative learning, it is beyond any doubt that the essential power of the concept for enhancing online and networked learning through technology, should be sought in the fact that its principles are rooted in dialogue and interaction, and thus, focused in the very fundamental condition of human existence, and “medium” of human growth and prosperity (Heidegger, 1986; Sorensen, 2004).

Tony Kaye, back in 1992, described one of the challenges afforded by the new paradigm as a consequence of this, as the potential for “learning together apart” (Kaye, 1992, p. 1). To us, the editors, there is no doubt that regardless of the distance between learners, the learning potential of the new, educational paradigm is related to the basic human principle of collaborative dialogue and knowledge building, and to the collaboration enabled between learners (Ó Murchu & Sorensen, 2004; Salmon, 2000; Scardamalia & Bereiter, 1996; Sorensen & Takle, 2004).

Which criteria would we use to identify a learning process as a genuine, joyful, social, and engaging endeavour? In order for learners to develop profiles of critical and democratically-oriented global citizens, learning processes need to unfold joyfully, collaboratively, and nonauthoritatively, in a shared trajectory among learners, allowing them to fully engage:

*When we do things with purpose and conviction, we recharge our vital batteries, and the sudden flash of ‘life failure’ never occurs. But when we begin to live mechanically, performing our everyday tasks as a mere habit,*

*this robotic activity fails to recharge our vital batteries; then, suddenly, our inner resources are inadequate to meet some sudden challenge.* (Wilson, 1998, p. 202)

The processes we, the editors, envision for learners deny the necessity for boredom, and refuse to accept the common state of a resulting “fatigue” in learners. Learning processes should not only be relevant and “educating” with respect to the development of democratic values and skills, they should also, in holistic ways, be conducive to genuine (Colaizzi, 1978), meaningful (Jonassen, Peck, & Wilson, 1999), and soulful learning (Sorensen & Ó Murchú, 2005), while cultivating motivation, initiative, ownership, and joyful engagement (Wenger, 1998; Wenger, McDermott, & Snyder, 2002) as part of their methodological considerations — the when, where, what, and how:

*For to miss the joy is to miss all. The mystic sense of hidden meaning (...) the glow of meaning and purpose hidden inside everyone.* (Wilson, 1998, p. 203)

How can we envision the embodiment of this new paradigm at work in achieving such a type of learning in the name of “enhancement of learning through technology”? What might potentially become the next subtle insight for educators and designers of education to uncover — or discover — and explore?

In our call for chapters for the book, we challenged the academic world to leave any fixed definitions of “learning” and “technology” aside. We invited the authors, in the presentation of their research, to “go outside the box” and, with open minds and souls, boldly envision what no one else had reported in the existing body of literature on enhancement of learning through technology. Based on their own experiences and insights, we asked them to write for the future, and to dream the dreams that would challenge others to engage in debate, and battle to finding vital future pathways of enhancing learning through technology. Learning, viewed as a joyful, holistic, democratic, and transformative process that unfolds collaboratively and genuinely, anywhere and anytime, in a framework and context that soulfully allows the learner to “breathe” or “energize”:

*Stating the thing broadly, the human individual lives far within his limits; he possesses powers of various sorts which he habitually fails to use. He energizes below his maximum, and he behaves below his optimum.* (Wilson, 1998, p. 205)

In Chapter I, “Online Communities and Professional Teacher Learning: Affordances and Challenges,” Norbert Pachler and Caroline Daly, from England, establish the contemporary context for developing teachers’ professional learning through the affordances of new technologies. Their errand here is to establish what claims can be made about the potential of online communities to provide a counter to the reductive models of professional development that have dominated teachers’ learning in England and Wales in recent years. Most critically, new technologies have a contribution to make in debating the professional and ethical principles that govern the choices teachers make about taking action that affects learning: their pupils’, as well as their own. Only from this perspective, can technologies affect the development of a practice that is based on enhanced, critical understandings of what they “can do” rather than what they are told to do.

Anders Olafsson and J. Ola Lindberg from Sweden, in Chapter II, “Enhancing Phronesis: Bridging Communities Through Technology,” explore the possibilities to use technology in order to improve the contextual and value-based dimensions in online, distance-based teacher training in Sweden. It is argued that active participation, collaboration, and dialogue are vital in order to foster common moral and societal values among the teacher trainees, but that there is a need for rethinking how technology could be used in order to accommodate such processes. The chapter suggests that a development of a shared teacher identity is possible by expanding the scope of online community, and bridging teacher-training practices to teacher practices, thus including already practicing teachers, teacher trainers, and teacher trainees in a joint educational community with the crucial input of technology.

In Chapter III, “Enhancing the Design of a Successful Networked Course Collaboration: An Outsider Perspective,” Rema Nilakanta (USA), Laura Zurita (Denmark), Olatz López Fernandez (Spain), Elsebeth Korsgaard Sorensen (Denmark), and Eugene Takle (USA) present a preliminary critique of an online, transatlantic collaboration designed for collaborative learning. The critique by external reviewers, using qualitative methods within the interpretivist paradigm, hints at critical factors necessary for successful online collaborative learning. The evaluation supports the view that in order to raise the quality of online dialogue and enhance deep learning, it is good practice to heed, as well as give voice to participants’ needs by involving them directly in the design of the course. With the proliferation of e-learning in higher education, it is important that we pay close attention to the design of online technologies and pedagogies that claim to support learning that is necessary for a global world: learning that aims to develop future leaders who are successful across cultures, disciplines, and geography. This requires not only a focus on the design of online courses, but also exploring innovative ways of evaluating them.

In Chapter IV, Ian Gibson, USA, in his chapter “Enhanced Learning and Leading in a Technology-Rich, 21<sup>st</sup> Century Global Learning Environment,” explores the evolution of thinking about learning, resulting from the increasingly ubiquitous presence of instructional technology and communications technology in learning environments. The chapter further describes the impact of technology on the potential transformation of four-walled classrooms into global, online, learning communities from a constructivist perspective, while looking at learner/teacher roles in the learning process. Expectations for education are changing. The knowledge base of education is changing. Conceptions of how individual learning occurs are changing. The tools available to “do” education are changing. The roles of teachers are changing. Understandings of what should be learned, who should be learning, how they should learn, where they should learn, and when they should learn, are changing. So, expecting school leaders to recreate their conceptions of what constitutes appropriate leader behaviour should also change!

Erik Champion, from Australia, in Chapter V, titled “Enhancing Learning Through 3-D Virtual Environments,” delves into an area of global debate, and clearly states that educators cannot begrudge students their envy in looking at popular films and computer games as major contenders for their spare time. While teachers could attempt to fight the popularity of games, he suggests a more useful endeavor would be to attempt to understand both the temptation of games, and to explore whether we could learn from them, in order to engage students to learn, and to educate them at the same time.

Chapter VI, “Inquisitivism: The Evolution of a Constructivist Approach for Web-Based Instruction,” by Dwayne Harapnuik from Canada, introduces “inquisitivism” as an approach for designing and delivering Web-based instruction that shares many of the same principles of minimalism and other constructivist approaches. Inquisitivism is unique in that its two primary or first principles are the removal of fear and the stimulation of an inquisitive nature. The approach evolved during the design and delivery of an online, full-credit university course. The results of a quasi-experimental design-based study revealed that online students in the inquisitivism-based course scored significantly higher on their final project scores, showed no significant difference in their satisfaction with their learning experiences from their face-to-face (F2F) counterparts, and had a reduction in fear or anxiety toward technology. Finally, the results revealed that there was no significant difference in final project scores across the personality types tested. The author hopes that inquisitivism will provide a foundation for creating effective constructivist-based, online learning environments.

Pirkko Raudaskoski, from Denmark, in Chapter VII, “Situated Learning and Interacting With/Through Technology: Enhancing Research and Design,” discusses the growing interest within social and humanistic sciences towards understanding theoretical and analytical practice. Lave and Wenger’s concept,



“situated learning,” describes the process of newcomers moving toward full participation in a community. Situated learning is equalled with social order: instead of understanding learning as a separate practice from everyday life, learning is seen as a more mundane phenomenon. Ethnomethodology and conversation analysis (CA) find that social order is created continuously by its members in their interactions. As ethnomethodology and CA base their findings on rigorous data analysis, they are extremely useful in analysing situated learning in everyday practices. The interdisciplinary interaction analysis (IA) is suggested as the best way to study the various aspects of situated learning in technology-intensive interactions. Learning is taking place all the time, in educational and other institutions and in everyday life, and Pirkko boldly states that technology played a decisive role at all stages of the learning process.

Jørgen Bang and Christian Dalsgaard, both from Denmark, envision in Chapter VIII “Rethinking E-Learning: Shifting the Focus to Learning Activities,” perspectives on rethinking e-learning, shifting the focus to learning activities. They clearly state that technology alone does not deliver educational success. It only becomes valuable in education if learners and teachers can do something useful with it. Their main goal is to rethink e-learning by shifting the focus of attention from learning resources (learning objects) to learning activities, which also implies a refocusing of the pedagogical discussion of the learning process. Firstly, they identify why e-learning has not been able to deliver the educational results as expected 5 years ago. Secondly, they discuss the relationship between learning objectives, learning resources, and learning activities, in an attempt to develop a consistent, theoretical framework for learning as an active collaborative process that bears social and cultural relevance for the student. Finally, they boldly specify their concept of learning activities, and argue for the educational advantages of creating large learning resources that may be used for multiple learning activities.

Chapter IX, “Empirical Analyses of Computer-Supported Collaborative Learning and the Central Research Questions: Two Illustrative Case Studies,” is written by Tony Carr from South Africa, Vic Lally from theUK, Maarten de Laat from the UK, and Glenda Cox from South Africa. Their chapter examines the theoretical and conceptual issues involved in gathering evidence to build a database for the design of virtual higher education (computer supported collaborative learning — CSCL and networked learning — NL). After briefly surveying the current state of CSCL/NL research and its lack of theoretical synthesis, the authors cleverly propose three high-level research questions as a way of focusing efforts on finding answers. In particular, the authors look at the way theory and praxis (theory-informed practice) might be more effectively and boldly engaged through “theory-praxis conversations,” in order to make effective use of empirical data to build the evidence base that will be needed to design and build virtual higher education over the next 10 years.

Chapter X, titled “Identifying an Appropriate Pedagogical Networked Architecture for Online Learning Communities within Higher and Continuing Education,” is written by the editors, Elsebeth Korsgaard Sorensen (Denmark) and Daithí Ó Murchú (Ireland). It addresses the problem of enhancing the quality of online learning processes through pedagogic design. Based on their earlier research findings from analysis of two comparable online master courses offered in two Masters’ programmes, respectively from Denmark and Ireland (Ó Murchú & Sorensen, 2004), they present what they boldly assert to be a fruitful, student-centred, pedagogic model for design of networked learning. The design model is composed of what they have identified as unique characteristics of online learning architectures that, in principle, promote and allow for global intercultural processes of meaningful learning through collaborative knowledge building in online communities of practice.

Chapter XI is written by John Cuthell from the UK, and is titled “Ms. Chips and Her Battle Against the Cyborgs: Embedding ICT in Educational Practice.” This chapter focuses on practicing teachers, and examines the institutional and individual factors that inhibit the implementation of information and communication technology (ICT) as a tool for teaching and learning. The affordances of ICT are identified, together with their contribution to attainment, creativity, and learning. John argues that many of the obstacles to meaningful uses of ICT are embedded in the assumptions inherent in many institutional frameworks that are predicated on an outmoded industrial model. This model drives many school timetables that process learners through the school machine. Individual change is easier to effect than institutional: the author boldly provides suggestions to liberate creative teachers from constraints of the system.

Chapter XII, titled “Making Sense of Technologically Enhanced Learning in Context: A Research Agenda,” is written by Simon B. Heilesen and Sisse Siggaard Jensen from Denmark. It proposes that technologically enhanced learning should be understood and evaluated by means of a combination of analytical strategies. These strategies will allow us to analyze it, both as seen from the macroanalytical or “outside” perspective of a rich, social, cultural, and technological context, and from a microanalytical or “inside out” perspective of individual sense making in learning situations. As a framework, Simon and Sisse use sense-making methodology, and a model for causal-layered analysis limited to the “remediated classroom” of constructivist, netbased, university education. Problematizing some common assumptions about technologically enhanced learning, the authors boldly define 10 questions that may serve as the basis for a research agenda meant to help to understand why the many visions and ideals of the online or remediated classroom are not more widely realized and demonstrated in educational design and practice.

The final chapter, XIII, titled “Brain-Based Learning,” is written by Kathleen Cercone from the USA. Addressing an area of much debate, it explores the dynamic field of neuroscience research, which explains how the brain learns.



Since the 1990s, there has been explosive growth in information about the neurophysiology of learning. A discussion of the neuroanatomy that is necessary to understand this research is presented first. Kathy further describes current brain research, with particular focus on its implications for teaching adult students in an online environment. In addition, two instructional design theories (Gardner's Multiple Intelligence and Kovalik's Integrated Thematic Instruction), which have a basis in neuroscience, are further examined. Recommendations founded on brain-based research, with a focus on adult education, follow, including specific activities such as crossed-lateral movement patterns, and detailed online activities that can be incorporated into an online learning environment or a distance learning class (and face-to-face classrooms) for adults. Comprehensive recommendations and guidelines for online learning design have been provided as suggestions for making maximum use of the brain-based principles discussed in this chapter.

All 13 chapters address "enhancing learning through technology" in a manner that challenges the reader to morph current thinking, and they boldly suggest new pathways and avenues towards ensuring that technology, no matter how we define it, and no matter how we present it, becomes an integral, meaningful, and soulful collaborator at all levels of education and society.

The editors believe that it is no longer acceptable to regard learning simply as a product of teaching, and to regard technology as the study or use of the mechanical arts and applied sciences. Neither is it acceptable for educational practitioners and researchers to continue to treat the two phenomena of "digital technology" and "meaningful learning" as two separate entities, and thereby, indirectly avoid the confrontation with the necessity of facing the complex integral design challenges imposed by the new educational paradigm. We hope and believe that this book will cause many to debate, discuss, and invent future pathways of enhancing the quality of learning through digital technology, as a means of cultivating and promoting prosperity of genuine, meaningful, and soulful learning.

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