New Digital Technology in Education
Conceptualizing Professional Learning for Educators

(Book Review)

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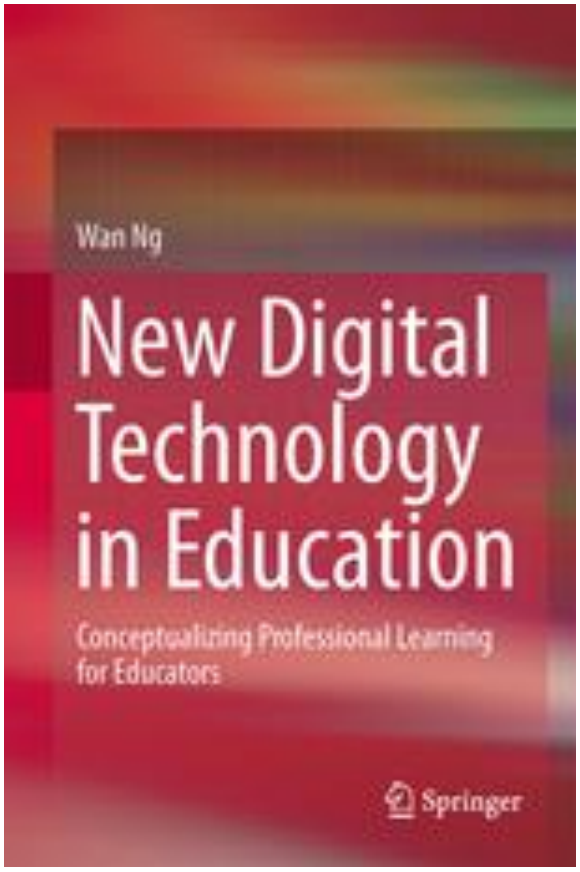

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New Digital Technology in Education

Wan Ng

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Introduction

When we bring the concepts of classroom or education and technology together, what comes to our minds is a classroom filled with learners holding a mobile device, such as a smart phone or laptop, in their hands. This has only been the case since the 2000s, when ownership of a mobile device and internet access became more common. What about before the 2000s? Of course, technology was not regarded as it is today and the perception of innovation was different. The first trace of technology use in a classroom dates back to circa 1650 and manifests itself in the form of Hornbooks, wooden paddles with printed lessons (Wilson, Orellana & Meek, 2010). Even the introduction of pencils into classrooms in the late 19th century (ibid) was a gift of the technology of the time. Nowadays, we are discussing the benefits of Cloud computing or how to integrate Augmented or Virtual Reality in classroom contexts etc. Someday in the future, these might be things of the past as Hornbooks are now. This is just an example that humankind is developing at a great pace, and so is technology. Inherently, people adapt themselves and things surrounding them to the changes brought by this development. Educational environments are no exception. Thereby, computers, smart phones, smartboards etc. have made their ways into the classrooms.

This book focuses on the digital technologies aspect of this development. "Digital technologies are electronic tools, systems, devices and resources that generate, store or process data. Well known examples include social media, online games, multimedia and mobile phones" ("Teach with digital technologies", 2019). Although these technologies have been benefited in the classroom for a long time now, there is still no clarity on how to make use of them. Setting off from this point of view, this book tries to touch upon the concerns that educators have while incorporating digital technologies into their practices in their classes. Consisting of nine chapters under four parts, Ng's book introduces "theoretical and empirically based perspectives of learning with technology and teaching of today's digital students with technology. It proposes a pragmatic and sustainable framework of professional learning for educators to embed the use of digital technologies into their repertoire of teaching

strategies" (Ng, 2015, p. viii). The perspectives and framework Ng proposes in her book are beneficial for researchers and teachers of all subjects at all levels.

Presentation

The outline of the book is as follows:

Part I: Review of Digital Technology Integration in Education and the Conceptualising of a Professional Learning Framework

Chapter 1: Change and Continuity in Educational Uses of New Digital Technologies

Chapter 2: Adopting New Digital Technologies in Education: Professional Learning

Part II: Components of the Self-Regulated Professional Learning Framework

Chapter 3: Learners in a Digital Society: Digital Practices of Young People and Their Teaching Implications

Chapter 4: Theories Underpinning Learning with Digital Technologies

Chapter 5: Affordances of New Digital Technologies in Education

Chapter 6: Digital Literacy: The Overarching Element for Successful Technology Integration

Part III: Current Trends in Educational Technologies

Chapter 7: Technology Integration and the Flipped Classroom

Chapter 8: Mobile Learning: BYOD and Personalised Learning

Part IV: Conclusion

Chapter 9: Conclusion

There are two chapters in Part I and in these chapters, Ng presents the current situation of digital technologies in learning / teaching environments. She starts off by stating how these technologies have evolved since Google was first introduced in 1998. Now, there is an abundance of available digital technologies that can be benefited in and outside the class, for instance, desktop computers, mobile devices (laptops, tablets, mobile phones etc.), digital recording devices (cameras, voice

recorders etc.), data logging equipment and associated probes, interactive whiteboards (SmartBoards), Web 2.0 technologies and other online resources (TED-Ed, iTunesU, Skype, Moodle, Dropbox etc.), educational software packages (Inspiration, Adobe Illustrator etc.) just to name a few (Ng 2015). Contrary to expectations, this plethora of choice in digital technologies, although most of them are available for free, doesn't redound to educational environments. Based on this fact, Ng addresses the reasons for integrating digital technologies into educational environments, technological changes in education, effect of technology use on learning and impact of digital technologies on practice and the persisting issues. As mentioned in the chapter, the literature regarding educational technologies suggests that digital technologies support learning through increasing learners' motivation, developing their minds, providing real-life-like experiences, creating a space where learners put what they learn into practice, promoting communication and collaboration, enabling research, maintaining learning in out-of-school contexts, promoting individual learning by increasing self-management. However, these are not possible unless technology-based activities are in accord with learning objectives and non-technology-based activities. What teachers came across while incorporating technology into their teaching in the beginning of the 2000s still exists today. Although technology has improved beyond imagination, it has not been applied into educational contexts successfully due to barriers at administrative and individual level because, as the chapter suggests, related parties of digital technologies in educational contexts have not been convinced whether they provide any advantages in teaching / learning environments.

In Chapter 2, Ng focuses on professional learning by keeping in mind that the success of a learner depends on the quality of his/her teacher. Concordantly, this chapter focuses on the barriers at individual level, as mentioned above, and provides a professional learning framework, which is a very useful guide, for educators about how to find out recent digital technologies, how to design teaching and learning materials and how to experiment the planned pedagogy at their own pace. Adopting characteristics of efficient professional development and individualised learning, this

framework puts emphasis on the significance of the technical and pedagogical aspects of technology integration into teaching/learning practices, the development of educators' digital literacy, and deep learning throughout these processes. This chapter paves the way for digitally literate educators and better learning outcomes through technology by giving specific examples that can be incorporated into teaching/learning, such as Prezi, SurveyMonkey, YouTube, Skype, Inspiration etc.

In Part II, there are four chapters. The first of them, i.e. Chapter 3, focuses on how learners use digital technologies, the reasons underlying their use of these technologies and the benefits of their integration into educational contexts. Most learners from all ages own a mobile device and use it for various purposes such as entertainment, academic etc. and they spend a considerable part of their time on social media. That is why Ng mostly focuses on social media throughout the chapter. For educators to turn this into an advantage, the chapter provides some opportunities like learning management systems and possible challenges that might be encountered in the process. She also implies that students of today are digitally literate, but in educational technology terms. Therefore, educators of today should scaffold their learners in the use of technology for educational purposes keeping in mind that they prefer activities they take part in actively rather than passive ones such as reading a text or watching a video. As it is implied throughout the book, the chapter also emphasises that technology integration into classrooms is beneficial only when the purpose is clear. Teachers should be digitally competent enough to determine what is and is not conveyed efficiently through technology. Finally, Ng suggests that instead of making use of technology in the classroom all the time, technology should be benefited less often, which would produce a better effect.

Chapter 4 presents the underlying theories of integrating digital technologies in educational contexts, namely behaviourism, constructivism and social-constructivism, constructionism, cognitivism, cognitive load theory, connectivism, situated learning and communities of practice, computer-supported collaborative learning, activity theory. Each of these theories is analysed in a way to justify technology use in education at both administrative and individual levels. This

chapter serves as a guide for educators designing technology-integrated curricula to determine learning outcomes.

In Chapter 5, Ng touches upon the conveniences that new digital technologies have brought in education. While Chapter 2 states that technology and pedagogy depend on each other, this chapter focuses on how the former benefits the latter and, with the help of these technologies, tries to ensure that teachers teach and learners learn better. Among these above-mentioned conveniences are increase in learner motivation, promoting higher order thinking skills and critical thinking, enabling learning at a self-determined pace, catering for multimodality. The chapter introduces a wide array of specific educational technologies which can be used in and outside the class by both teachers and students. Ng also explains how these can be embedded in education and their advantages. However, she also warns educators that embedding technology into education successfully requires digitally literate educators and learners; educators should develop some criteria and be selective before making use of these technologies. It should also be kept in mind that as technology and educational environments keep evolving, the innovations stated in this chapter might become obsolete someday.

Chapter 6, the last chapter of Part II, scrutinizes the concept of digital literacy, which is the underpinning influence on successful use of educational technologies both in- and out-of-school contexts, and proposes a framework that demonstrates that there are other literacies, such as critical literacy, multiliteracies, technical and operational literacy and social-emotional literacy, to develop so as to become digitally literate. It is defined as "the construct that sustains the competent use of digital technology across the various contexts throughout an individual's life" (p. 128). This chapter explains why digital literacy is significant, what it is composed of and how it is developed, and states that technical, cognitive and social-emotional skills must develop hand in hand to achieve digital literacy. Ng argues in the chapter that although young people are competent in using technology, educators should teach them the cognitive and social aspects of using it. On the other hand, although they

are good at using technological devices, they are incompetent in educational technologies, so they should be taught how to use them properly and efficiently. To achieve this, educators themselves must be digitally literate so that they can prepare a technology-based curriculum containing the acquisition of necessary digital literacy skills. Ng implies that being digitally literate is a must to survive in contemporary educational environments.

In Part III, Ng discusses current trends in educational technologies. There are two chapters in this part. The first one of them, Chapter 7, provides an insight into flipped classroom instruction explaining its theoretical underpinnings, its effective application into classrooms, research and pedagogy regarding it, advantages and disadvantages of flipping the classroom, and at the end of the chapter, Ng provides a sample case for a flipped classroom pedagogy. The chapter states that there is limited research in the literature regarding flipped classroom and the findings have been mostly positive. In order to assess its effectiveness in depth, more data is required. Therefore, for researchers interested in flipped classroom, this chapter provides a useful starting point.

The other chapter of Part III, Chapter 8, focuses on the use of mobile devices in education, particularly bring-your-own-devices (BYODs) and personalised learning. As discussed in the chapter, learning occurs as a result of personal endeavours. Depending on their previous knowledge, learners construct new knowledge differently. In order to cater for this, educators should assess learners' previous knowledge and prepare convenient strategies so that they can provide various pathways to learners. Therefore, they can control what, where, when and at what pace to learn. Meanwhile, it should be kept in mind that learners might experience increased cognitive load or become distracted by other functions of mobile devices, e.g. social media, games etc. Besides, students' focus should also be directed towards learning rather than the technology itself through inquiry-, project- and problem-based learning methods. Ng suggests that for a successful curriculum incorporating mobile-technology-based personalised learning, learning outcomes should be

expressed clearly, different pathways should be offered to learners, and opportunities should be provided to them to receive formative feedback both from their educators and peers.

The final part, Part IV, and the final chapter, Chapter 9, have the same title. In this chapter, Ng argues that the rapid development of educational technologies does not manifest itself in teaching/learning practices. There are obstacles to effective integration of technology into education and unfortunately, these barriers are not different from the ones existing nearly twenty years ago. Educators should be digitally literate, know how to benefit from a tool in his/her teaching and be well-versed in its features. To explain the interdependency between technology and pedagogy, Ng uses the travel analogy, thus she clarifies the rationale behind what tool to use and how and why to choose it. She also states that digital fluency among educator is very low because of lack of professional development opportunities, underfunding, inadequate support for leadership, educators' reluctance to allocate their time and energy, and lack of formal digital literacy agenda. In this chapter, it is also mentioned that through deep thinking and deep learning processes, lesson plans should be prepared in a way to answer "what content is appropriate for students to learn with the support of technology, which technologies do that best and how would students achieve the learning outcomes by interacting with the technology-integrated learning material" (Ng, 2015, p. 196). The chapter also argues that although use of technology among students is extremely common, it should only be used for teaching/learning when its value and purpose are clearly understood by them. Students need to be scaffolded by their teachers to benefit from educational technologies. In the final paragraphs of her book, Ng states that teachers who successfully integrate technology into his/her teaching are also good at teaching without technology. Technology integration is not a must, but the conveniences it provides are undeniable.

Evaluation

This book is a reflection of Wan Ng's vast knowledge and experience on educational technologies that she has constructed through empirical and secondary data herself over the years. She presents how educational technology has evolved over time and its current position in today's educational contexts. However, it might be of use if she included some future aspects. Emphasising that technology and pedagogy are interdependent, she provides clear and purposeful frameworks and methods by explaining their theoretical underpinnings and affordances, and through these educators can incorporate digital technologies into their classes. She also introduces a range of specific websites, applications and software, which are popular these days, useful, inspiring, motivating and facilitating, and which can be used in and outside classrooms. On the other hand, the layout, organization and content of the book are well-prepared, and Ng's use of plain language and the inclusion of figures and tables enable her to convey her ideas clearly and make her readers easily comprehend the content. All these make the book serve as a useful guide for teachers, teacher trainers and researchers, even learners, who want to keep up with the era we live in.

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