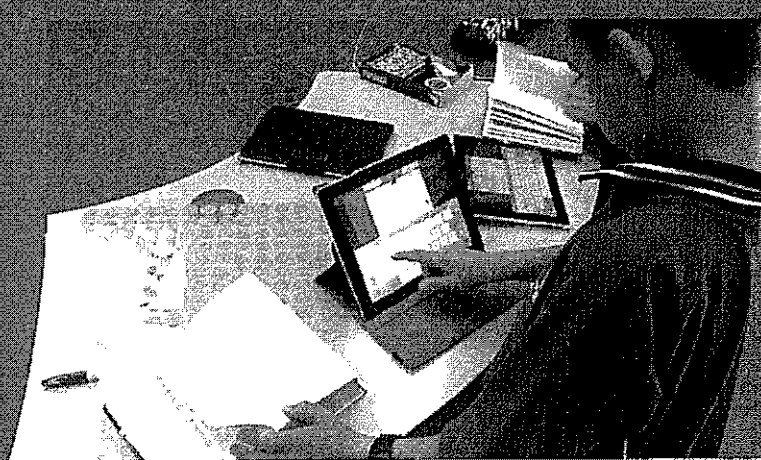


APPS, TECHNOLOGY AND YOUNGER LEARNERS

International evidence for teaching

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LITERACY TEACHING WITH TABLETS IN BILINGUAL PRIMARY CLASSROOMS

The Malta TabLit Study

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This chapter outlines the ways in which teachers in five primary classrooms in Malta used tablets over the course of six months for the teaching of bilingual literacy. The official policy, as outlined in the National Literacy Strategy for Malta, is of balanced literacy teaching and learning in the two languages of schooling in Malta: Maltese and English. Teachers' planning and preparation, the classroom environment, instruction and pedagogy were documented using a focus group, classroom observations, teacher interviews and reflective diaries and student questionnaires. Findings showed that the teachers integrated the use of tablets in their teaching for a number of creative literacy activities in the two languages, including reading comprehension, and guided and creative writing. The chapter concludes with recommendations for teachers' professional development, including school-based professional and technological support and ways to strengthen school-home links with the use of tablets.

Keywords: Integration, curriculum, literacy, collaboration, differentiation, motivation, engagement

Study background

The National Literacy Strategy for Malta (Ministry for Education and Employment Malta, 2014) outlines the range of skills children need to read and write in Maltese and English, the two languages of schooling in Malta. In order to foster children's bilingualism and biliteracy, they need to be provided with rich learning opportunities in both languages, including access to learning materials in both languages, and engagement in meaningful tasks.

The availability of resources and a sustained focus on the nature and quality of

relationships mediating children's experiences around different media and texts are crucial (Green and Hannon, 2007; Neuman and Celano, 2006; Yelland and Masters 2007). As Au and Raphael (2000, p. 170) argue, 'ensuring educational equity involves helping students become literate in all artifacts of literacy, not only those historically used and present in today's society, but those likely to become prominent in the future'. In order to understand the impact of tablets and literacy apps on children's learning in Maltese classrooms, we needed to be aware of the inevitable influence of teachers' practices and attitudes towards the use of technology and, in particular, tablets. Previous research with tablets in classrooms shows that tablets can support teachers to be more flexible and to generate learning materials for students of different abilities and levels, especially with regard to struggling readers (Shuler *et al.*, 2013). They can also allow for increased communication and feedback opportunities between teachers and students (Snell and Snell-Siddle, 2013) and support more autonomous (Wong, 2012) and more personalised learning (Kearney *et al.*, 2012).

Several studies have demonstrated that for technology to have a lasting positive impact, it needs to be integrated into existing classroom practice rather than provided as an 'add-on'. For example, Hutchison *et al.* (2012) showed how one teacher in the US with 23 students in a fourth-grade class was able to meet her curricular print-based literacy goals while simultaneously introducing children to some twenty-first-century skills, such as navigating the different features of a digital text, designing digital learning tools, and communicating with other readers online.

As mentioned by Roskos in Chapter 3, meaningful integration of tablets has the potential to enhance literacy instruction. In our study, we were keen to understand how literacy teachers in Malta integrated tablets into their existing practice. We focused on literacy because of our own expertise in this area, and the official policy emphasis on technology-mediated literacy instruction in Malta. We were also mindful of the emergent evidence concerning the potential of mobile technologies for supporting the teaching and learning of literacy (Plowman and Stephen, 2007; Beschorner and Hutchison, 2013). For example, Flewitt *et al.* (2015) investigated the ways in which iPads might offer new opportunities as well as challenges for teachers in a nursery, a primary school reception class, and a special school in the UK. They found a lot of variability in the ways iPads were used across the three settings, but concluded that well-planned, iPad-based literacy activities can stimulate children's motivation and influence practitioners' perceptions about children's literacy competence.

There needs to be a clear instructional planning framework for teachers to integrate tablets into their teaching. Mishra and Koehler (2006) suggested that the most effective way to integrate technology into classroom instruction is for teachers to simultaneously draw on their technological, pedagogical, and content knowledge (TPACK). This involves an understanding of how technology and content are reciprocally related. However, teachers often have a difficult time using their TPACK in a systematic and useful way (Hutchison *et al.*, 2012).

The research design

Theoretical framework

The primary theoretical referent in our conceptualisation of the study and interpretation of findings was Danielson's framework for professional practice (2007). The framework presents a number of components, which have been shown to promote improved student learning. These components are clustered into four domains: 1) planning and preparation; 2) the classroom environment; 3) instruction; and 4) professional responsibilities. Danielson's framework served as a basis for our research question: How are the domains of professional practice influenced by the introduction of tablets in Maltese classrooms for the teaching of literacy?

Study context

Five Grade 3 and Grade 4 (7- to 8-year-olds) classes from four Malta primary schools participated in the study. The teachers and children in these classes were provided with tablets, with a range of devices used across the schools, including Samsung Galaxy Tab 3 and 4, Intel Classmate TL101E1, and LearnPad. In all schools, tablets were provided free by the suppliers, with the view to expanding the programme with the most effective and popular devices later on. All the schools, apart from one of the state schools, allowed children to take them home after the school day. Teachers were free to choose the apps and programs, and were encouraged to share their experiences of using the tablets in regular meetings with other teachers participating in the pilot study. A brief professional development training programme was provided by the e-Learning Department of the Education Ministry in Malta, and involved a number of models for technology-mediated curricula like substitution augmentation modification redefinition (SAMR) and TPACK, including a review of a number of age-appropriate apps. Training in hardware and software solutions was provided by a number of industry partners connected to the project.

Study participants

Five teachers were involved in this study. Two teachers were from one of the state schools, one from another state school and one each from a Church and an Independent school. These teachers were selected because of their specific goal to use the tablets for the teaching and learning of literacy.

Study procedure

An ethnographic approach, where a researcher observed classroom dynamics in their natural settings, was adopted (Gallagher *et al.*, 2015). Permission to conduct the study was granted by the Education Ministry in Malta, and ethical consent was

obtained from the University of Malta Research Ethics Committee. A range of language activities in both languages were observed: listening comprehension tasks including listening to recorded readings by the teachers, reading from digital books, reading comprehension, and guided and creative writing activities.

Data collection

At the beginning of the study, a focus group meeting was conducted involving all the participating teachers and a member of their school management team. Initial interviews were conducted with all the teachers. All classroom observations were followed by one-to-one interviews with the classroom teachers. The aim of these interviews was to understand more fully how teachers used the tablets to reach their lesson objectives. A final interview with each participating teacher took place at the end of the study to investigate further the impact the teachers felt that the introduction of tablets had on their pedagogy and literacy teaching, and to what extent they felt this might be sustained beyond the duration of the pilot programme. We also asked the teachers to keep a diary of how they used the tablets, and to record their reflections on the lessons. These were analysed together with the interview data at the end of the study, using thematic analysis. All interviews were audio-recorded and transcribed verbatim by a researcher who is fluent in both Maltese and English. For the purpose of data presentation, we refer to the five teachers participating in the study as: Teachers 1, 2, and 3 from the two state schools, Teacher 4 from the Church school, and Teacher 5 from the Independent school.

Data analysis

The theoretical framework by Danielson (2007) was followed for the data analysis. Coding was related to the four domains and competences presented in this framework. All the raw data from the various sources (focus group, classroom observations, teacher interviews, teacher reflective diaries and student questionnaires), were coded thematically by the two authors. Comments were grouped and labelled through analytic-inductive methods with a term that captured the essence of the comments, with preference given to terms used by the participants in the interviews. The authors, who conducted the analysis separately, and a third researcher, who was not directly involved in the study, agreed on the final themes.

Findings

Tablets were used for a wide range of language activities involving reading from e-books, sentence building, listening comprehension, language awareness activities, and guided and creative writing. Teachers used traditional materials, such as handouts, copybooks, and exercise and practice books, in conjunction with the tablets. Before we present the key themes that emerged from the data, we briefly

discuss the ways in which the tablets were integrated into literacy teaching in the different classrooms, and for teacher–pupil co-creation of multimedia literacy materials.

The teachers participating in the Malta TabLit Study appreciated the fact that they could use the tablets for both Maltese- and English-language activities. There was some initial concern that the tablets would restrict work in Maltese. However, the teachers were able to make use of a number of tablet-based resources in both languages. By downloading the MultiLing keyboard, the students could write on the tablet using the Maltese font, which was a big advantage in the bilingual classroom. It also provided many opportunities for the students to work together, despite their different language backgrounds. They were also able to create their own materials in both languages using the e-learning platform, Fronter. The teachers pointed out that the tablets helped the students to improve their reading skills in both Maltese and English, as summarised by Teacher 2 from a state school:

The difference I felt was in reading in both languages, especially in Maltese because 'Postijiet Sbieħ' (Beautiful Places), reader in Maltese, is not easy. Whenever I did it without the use of the tablet, they always got stuck. But since I can put the recording of the book on the tablet and they listen to it, they're becoming more fluent and they have progressed much more.

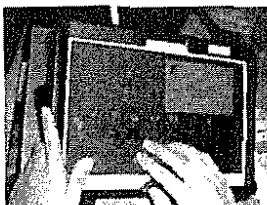
The children were able to co-create literacy materials with the teachers by using a number of apps. For example, *Storykit* and other apps allowed children to customise images and text, strengthening the connections between different media and the two languages. Teacher 1 from a state school set her class a 'visualisation' task during which the children were asked to read a story from the tablet, to 'imagine' the story, and to draw their ideas from the story in groups, using the app *Story Album*. Each group sent a picture to the teacher via e-mail. Follow-up activities involved predicting the rest of the story, writing the story in their own words, and publishing the final tale in the students' room of their school virtual learning environment. The teacher said that through the use of tablets: 'Learning in both languages has become more interesting and stimulating for the students, that's basically what it's all about'. Teacher 2 from another state school used *Answer Garden* for brainstorming sessions and to increase the students' vocabulary in both languages. The students in the class of Teacher 3 from the same state school got to a stage where they were downloading relevant literacy apps on their own, and sharing them with the teacher and their classmates during the regular class 'Show and Tell' activities.

Another technique adopted for integrating the use of the tablets was for the teachers to set the students a task that involved them searching, reading, and producing their own materials. In the class of Teacher 4 from the Church school, during a creative writing activity, the students were asked to find information about different kinds of dinosaurs on the Internet, and to use the Paint app to draw a picture of a dinosaur. Then they recorded 'describing' words about dinosaurs in a

word bank, which was then shared by the teacher on the tablets. Finally, the students were guided to compose and publish a story based on the character they had drawn. In another activity, the students were asked to look for and read online materials about pets, and to shoot a short video of their pet at home. Then they were asked to share this video with the teacher and classmates and to write about their pet. Teacher 5 from the Independent school asked the students to listen to a news report on the interactive whiteboard, which was then discussed in class. She asked the students to browse the Internet on their tablets and to look for a Maltese newspaper of their choice, written in English. The students were asked to look at news reports on this online newspaper and to note the style they were written in. The children showed the reports to each other and also wrote their own news report on the tablet using the Sticky Note application. Some students used the built-in keyboard to type, while others wrote in digital ink with their finger, and this was then transferred automatically to the rest of the document. Our observations show evidence of collaborative writing and problem-solving. The students discussed their reports with the teacher, and corrected and edited the work on their tablets. The final stage of the task was to search for photos related to their report and share these, together with the report, on the school forum, accessible to their friends and parents (Figure 12.1).

Theme 1: Motivation moderating literacy engagement

The first theme that emerged from our thematic analysis was the increased level of motivation that students exhibited towards literacy learning since the introduction of the tablets. All of the teachers described their students as being 'enthusiastic' and that for them, learning has become 'fun'. The students seemed to have become more interested and engaged, especially if they had been less engaged before (due to language or learning difficulties). For these students, the tablets provided an opportunity to showcase their literacy work and share it with others, which had boosted their confidence in their literacy skills. Increasingly students expressed



Step 1: Searching the Internet



Step 2: Accessing and reading online material



Step 3: Students writing their own material

FIGURE 12.1 Examples of different contexts for tablets' integration into the literacy lessons

more positive comments about the reading lessons and independent reading overall. Teachers too felt more motivated to teach reading, for instance, Teacher 4 told us that she felt that the introduction of the tablets had improved her teaching and made her a 'better teacher'.

All the teachers felt that the tablets made a significant difference to literacy motivation, especially in areas such as reading, creative writing, and sentence building. The teachers maintained that the students seemed more dedicated and eager to learn since the introduction of the tablets. According to Teacher 5, this was mainly due to the tablets' affordances, such as the possibility to download e-books or make audio-recordings:

Literacy has become more engaging for students in a way that they come and tell me: "Miss, listen to what I have read", "Miss I used Book Creator for this and that". Now to use Book Creator they have to read, they have to write, they have to put things in order, they have to do sequencing. So in this way the tablets have helped because they've engaged students to expand their literacy skills, which previously they did only as part of their homework. I find that really beneficial for students' literacy learning.

Theme 2: Differentiated teaching and learning

The teachers thought it beneficial that many of the e-books their students had access to on the tablets were levelled, and therefore catered for different reading and comprehension levels. Three teachers explained that they were able to create individualised activities for specific students and to send these activities directly to the student's tablets, for example, by creating different levelled quizzes or writing activities.

For example, in a lesson by Teacher 2, photos of animals were downloaded on the students' tablets. The students were divided into three ability groups and set tasks of different levels of difficulty. Group A watched a PowerPoint presentation on farm animals, Group B looked for information on desert animals, and Group C browsed a website called *Camouflage Field Book* that contained information about different environments for animals. The students read and discussed and worked within their group to gather information about different animals, supported by the teacher and support teacher. Each group presented their finished work to the rest of the class using the interactive whiteboard.

Differentiated teaching and learning were particularly salient for children with special educational needs, who seemed to adopt a more positive approach to learning when using the tablets. One teacher mentioned that her student with an autistic spectrum disorder was 'very pleased' to be reading on a tablet. Another teacher observed that her student with attention deficit hyperactivity disorder was 'enthusiastic' about writing on the tablet. The teacher from the independent school said that her student with specific learning difficulties was a more eager participant in literacy activities since the introduction of tablets:

I realised that my special needs student showed more enthusiasm and initiative. He actually wrote his own story without prompting. Usually when given a paper, he was very hesitant and uncooperative. Now by means of the tablet, he worked well and showed pride for managing to do his own work to the best of his ability. That was a very rewarding achievement and experience for him and also for me.

Theme 3: Collaborative learning

The third theme that emerged from the data and teachers' interviews was the belief that the tablet is an effective tool for increasing collaboration and teamwork among students. One example we observed concerned a *Titanic*-themed collaborative literacy session by Teacher 4. This was an English lesson promoting integrated language skills and supported by the LearnPad tablets. After initial brainstorming of what students knew about the *Titanic*, they watched a short documentary about the *Titanic* on their tablets. The class was then divided into small groups of three students. Each group wrote a script of about 60 words about the *Titanic* on the tablet. One of the students read out the script like a newsreader, and another student recorded this on the tablet. The recordings were then viewed and shared with the rest of the class on the interactive whiteboard, with opportunities for peer feedback. The students were extremely excited about this activity, as illustrated in Figure 12.2.

Theme 4: Bridging home and school

The final theme focused on accounts of the teachers about how the tablets continued and reinforced learning happening in the classroom while students were at home. This seemed to be both teacher- and student-mediated. Teacher 1, for

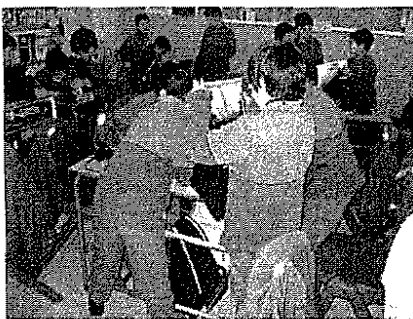


FIGURE 12.2 An example of students (7- to 8-year-olds) working collaboratively when using tablets

example, recorded herself reading a story and sent it to the children so that they could listen to it at home. Students also watched several teacher-recommended YouTube videos at home, enriching their factual knowledge of topics studied in the class. According to Teacher 5, taking the tablets home offered the students the opportunity to access e-books and to continue their independent reading at home: 'There is that excitement of wanting to know what is next in the story, and many do go home and continue reading the set book.'

Teacher 4 highlighted the importance of including parents and caregivers in the process of integrating tablets in teaching and learning: 'I showed the parents how to access the online reading scheme and how to familiarise their children with such a great tool. At this point, the parents were taking notes and seemed eager to try it out at home on their child's tablet.' There was also evidence of parents supporting their children's literacy homework on the tablets: 'I uploaded many useful literacy resources on the Samsung School learning platform for the children to use. I got a lot of positive feedback from the parents as they were able to use these resources to help their children to revise and consolidate on their tablets what was learnt in class.'

Discussion

Technology can increase student engagement and motivation (Chiong *et al.*, 2012), as long as it is used to support effective pedagogy. In the present study, Danielson's Framework for professional practice in teaching provided us with a lens through which to consider effective pedagogy (teaching practice) and look out for examples of effective technology integration. Our findings indicate that, overall, the use of tablets in the five pilot classrooms provided a very positive experience for the teachers and students involved. The teachers designed learning scenarios, activities and assignments which were appropriate to the abilities of their students, making use of the digital resources on the school e-learning platform and on the Internet. They planned for differentiated learning experiences for all children, including children with special educational needs. Classroom assessment of reading and writing was increasingly carried out through the technology. There was a positive attitude from both the teachers and students towards technology use in the classroom. The technology provided opportunities for the students to publish their work online, which could be viewed by other students and parents. There were also increased opportunities for collaborative literacy work among students in the classroom, such as co-creation of multimedia literacy materials. In this way teachers were more likely to tap into children's interests, skills and creativity (Nilsson, 2010). The thematic analysis also revealed that thanks to the tablets, the teachers were able to monitor their students' progress more efficiently and were able to relay this information to parents.

The teachers involved in this project had varied previous experiences with technology. Some of them used technology to a limited extent in their personal lives. However, all the teachers felt they required more professional development

about how to integrate the tablets into their teaching and learning. We therefore contend with Hutchison and Woodward (2014) that there is a need for an instructional planning cycle that would guide teachers in using their TPACK. Such a cycle, which could be adopted in schools, is referred to as a 'grounded approach' to technology integration and involves: choosing learning goals, making pedagogical decisions, selecting activity types to combine, selecting assessment strategies, and selecting tools/resources (Harris and Hofer, 2009). The approach is not linear, but recursive, in that decisions and choices, made at each of the five stages of planning, will change as new developments will require adjustments. Reflecting on our findings, this approach could provide a systematic way of integrating technology in an effective manner in everyday literacy teaching and learning across topics, taking into consideration language use, specific learning needs, and expected learning outcomes.

One cannot underestimate the importance of providing teachers with school-based pedagogical and technological support. It was evidently clear that the teachers who received adequate curricular and technological support by IT resource persons in a proactive and timely manner in this study were in a better position to integrate the tablets into their lesson planning and delivery and to meet the challenges that they faced. There should be more opportunities for professional development and for teachers to engage in joint planning and peer teaching.

The students found it relatively easy to access the material introduced at school from their tablets at home. They could easily review work initiated at school, and continue working on it at home. This allowed for increased involvement by parents as they were able to better monitor the work that their children brought from school. We therefore support the current opinion that technology provides a good opportunity to connect school- and home-learning activities (Falloon, 2015; Northrop and Killeen, 2013). However, there needs to be a structured framework for strengthening school-home links and for increased parental involvement through the use of the technology. Parents need to be brought on board as informed partners. Meetings are to be held with parents to inform them about the integration of the technology into their child's learning path, and about the e-learning platform, which allows them access to relevant educational materials. In this way, they can become more active participants in their children's learning journeys.

Conclusion

Carefully planned activities with tablets have the potential to bring about a dramatic and positive change in classrooms. Technology integration decisions are to be incorporated into the ways teachers typically plan for teaching and learning. This development may have a strong impact on the teaching and learning of literacy in our classrooms, including stimulating children's motivation and concentration (Flewitt *et al.*, 2015). The necessary conditions for this to take place seem to be the adequate provision of the required professional education

and development of teachers; improved and extended technological and pedagogical support structures in schools; and the design and implementation of a framework for the strengthening of school-home links and increased parental involvement. Effective teaching and technology will continue to evolve as more schools adopt technology-mediated teaching and learning. It is likely that tablets will positively influence this process overall, and in particular literacy teaching in bilingual primary classrooms.

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References

- Au, K.H. and Raphael, T.E. (2000). Equity and literacy in the next millennium. *Reading Research Quarterly*, 35(1), 171–188.
- Beschorner, B. and Hutchison, A. (2013). iPads as a literacy teaching tool in early childhood. *International Journal of Education in Mathematics, Science and Technology*, 1(1), 16–24.
- Chiong, C., Ree, J., Takeuchi, L. and Erickson, I. (2012). *Print Books vs E-books: Comparing parent-child co-reading on print, basic, and enhanced e-book platforms*. New York: The Joan Ganz Cooney Center.
- Danielson, C. (2007). *Enhancing Professional Practice: A framework for teaching* (2nd ed.). Alexandria, VA: ASCD.
- Falloon, G. (2015). What's the difference? Learning collaboratively using iPads in conventional classrooms. *Computers and Education*, 84, 62–77. doi: 10.1016/j.compedu.2015.01.010
- Flewitt, R., Messer, D. and Kucirkova, N. (2015). New directions for early literacy in a digital age: The iPad. *Journal of Early Childhood Literacy*, 15(3), 289–310.
- Gallagher, T.L., Fisher, D., Lapp, D., Roswell, J., Simpson, A., McQuirter, S.R., Walsh, M., Ciampa, K. and Saudelli, M.G. (2015). International perspectives on literacy learning with iPads. *Journal of Education*, 19(3), 15.
- Green, H. and Hannon, C. (2007). *Their Space: Education for a digital generation*. Available at: www.demos.co.uk/files/Their%20space%20-%20web.pdf
- Harris, J. and Hofer, M. (2009). Grounded tech integration: An effective approach based on content, pedagogy, and teacher planning. *Learning and Leading with Technology*, 37(2), 22–25.
- Hutchison, A. and Woodward, L. (2014). A planning cycle for integrating digital technology into literacy instruction. *The Reading Teacher*, 67(6), 455–464.
- Hutchison, A., Beschorner, B. and Schmidt-Crawford, D. (2012). Exploring the use of the iPad for literacy learning. *The Reading Teacher*, 66(1), 9.
- Kearney, M., Schuck, S., Burden, K. and Aubusson, P. (2012). Viewing mobile learning from a pedagogical perspective. *Research in Learning Technology*, 20, 14406.
- Ministry for Education and Employment Malta. (2014). National Literacy Strategy for All in Malta and Gozo. Available at: <http://education.gov.mt/en/Documents/Literacy/ENGLISH.pdf>
- Mishra, H.J. and Koehler, M. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017–1054.

- Neuman, S.B. and Celano, D. (2006). The knowledge gap: Implications of leveling the playing field for low-income and middle-income children, *Reading Research Quarterly*, 176–201.
- Nilsson, M. (2010). Developing voice in digital storytelling through creativity, narrative and multimodality. *International Journal of Media, Technology and Lifelong Learning*, 6(2), 148–160.
- Northrop, L. and Killeen, E. (2013). A framework for using iPads to build early literacy skills. *The Reading Teacher*, 66(7) 531–537.
- Plowman, L. and Stephen, C. (2007). Guided interaction in pre-school settings. *Journal of Computer Assisted Learning*, 23(1), 14–21.
- Shuler, C., Winters, N. and West, M. (2013). *The future of mobile learning: Implications for policy makers and planners*. Paris: UNESCO.
- Snell, S. and Snell-Siddle, C. (2013). Mobile learning: The effects of gender and age on perceptions of the use of mobile tools. Paper presented at The Second International Conference on Informatics Engineering and Information Science, Kuala Lumpur, The Society of Digital Information and Wireless Communications.
- Wong, L.H. (2012). A learner-centric view of mobile seamless learning. *British Journal of Educational Technology*, 43(1), 5.
- Yelland, N. and Masters, J. (2007). Rethinking scaffolding in the information age. *Computers and Education*, 48(3), 362–382.