How can the Charter for 21st century literacies support technology-mediated teaching and learning?

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Abstract

This work presents a critical review of pedagogical practices regarding the use of technologies. Hence, the practices that can make a positive contribution to children's literacy learning are identified. The study sets out to explore the pedagogical strategies that can be applied through the use of portable devices and other technologies in teaching and learning. It draws on an empirical study in two classrooms of a Maltese state school that I conducted between February and June 2016. The key findings indicated a number of pedagogical affordances which promoted multiliteracies, engagement with a range of modes and media, and collaboration. However, the study also identified that some areas were less well developed, such as the use of playful pedagogies, innovation and experimentation, and critical thinking. The implications for teacher education in Malta are considered.

Keywords

Digital literacy, technology-mediated, ICT, technologies, portable devices, 21st century competences

Introduction

This paper focuses on how the *Charter for 21st Century Literacies* (Burnett and Merchant, 2018) can serve as a guide to Maltese teachers in technology-mediated teaching and learning. The motivation behind this study emerged whilst I was working on my Doctorate thesis (Seguna, 2020) about the pedagogical affordances and challenges of tablets. During my academic journey I came across the *Charter for 21st Century Literacies* – a set of nine principles resulting from Burnett, Davies, Merchant, & Rowsell's (2014) research in new media. I found these principles to be incredibly relatable to my working

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definition of literacy and how teachers can integrate technologies into their teaching and learning. For this reason, for my doctorate I embarked on a relatively short but focused study (5 months of weekly observations) within a Maltese school. I tried to analyse how the use of tablets can reach the school's pedagogical aims, and how they can contribute further to literacy skills.

I feel that the key findings of my Doctorate thesis can be extended to other uses of technologies in education. The study reported in this paper, therefore, builds upon this work, where I also managed to identify how the Charter for 21st Century Literacies can serve as a guide for a meaningful integration of different types of technologies into teaching and learning. The nine principles include the importance of recognizing and building upon students' repertoires of textual practices, as well as the acknowledgement of the role of multimodality in meaning making. Burnett and Merchant (2018) also encouraged improvisation and experimentation which contain an element of creativity when it comes to the production of intelligible text. Meaning must be generated through different texts, contexts and situations which distinguish between the self and the others. Therefore, these authors highlight the importance of creating an environment in which students feel safe and supported so that they can experiment and collaborate with each other in the production of meaningful discourse.

The inception of this paper stemmed from my concern that, despite the Ministry for Education's initiative to pursue a huge investment of technologies, with plans to invest in interactive plan panels and roll-out portable devices in middle and secondary schools, the ultimate outcome depends on understanding the pedagogical affordances of these technologies as well as the challenges that teachers may face. Selwyn (2014) gives us food for thought with regard to the use of technologies in education by asking "Where is the evidence for success? What are the outcomes of this investment? What are the unintended consequences?" (p. 159). I consider these questions fundamental to understanding the pedagogical requirements. This may also entail constructive approaches to teaching and learning. In this study, therefore, I explore how the Charter could be of use in reflecting on how far Maltese teachers are, and could be, inclusive by broadening their definition of literacy and consequently changing their pedagogical approaches accordingly.

Charter of the 21st century literacies

While recognizing that no technological investment in our classrooms can be successful without the pedagogical preparation of educators, I discovered that the Charter for 21st Century Literacies was first published as a series of foundational principles in the last chapter of the book *New Literacies Around the Globe: Policy and Pedagogy* (Burnett et al., 2014). As described in the introduction, this Charter outlines nine recommendations for the effective integration of technologies in the classroom which change classroom dynamics and enable students to become more engaged. These are described in the below sections.

Acknowledge the changing nature of meaning making

This principle acknowledges the linguistic and social resources learners convey to the classroom, while encouraging the transition towards more open practices in the classroom. This principle also takes into consideration that there are differences in children's digital lives (Burnett and Merchant, 2018 p. 27). Children's experiences of digital literacies are different and unique despite the fact that social media and video games trends might give us a false impression. Burnett et al. (2014, p. 161) draw on Prinsloo (2005) when they argue that "their uses may reproduce inequalities rather than eradicating them." Rowsell et al. (2013, p. 351) delve further into this area of situated learning and argue that different meanings take place "even if technologies are the same when they enter a context compared with other contexts." This leads to the other principle about the need for educators to understand students so that they can teach them in a better way, as stated by Kincheloe et al. (2011).

Recognise and build on children's linguistic, social and cultural repertoires

This principle outlines the importance of recognising and building upon students' repertoires of textual practices. O'Mara & Laidlaw (2011, p. 152) describe how children involved in their study whilst using tablets can be "'creators', 'designers' and 'experts', rather than mere passive responders." In their observations, Kucirkova et al. (2013 p. 116) noted how technologies – in this case tablets – enabled students to create and share personalised stories.

Prinsloo and Rowsell (2012, p. 273) state that meaning is shaped by place and context, and diversity and multi-culturalism foster heterogeneity

and multiple meanings. Even though Malta is a small country, diversities are increasing due to immigration (Schembri & Attard, 2013). Situated learning has to be understood also in relation to the proliferation of different cultural groups.

Acknowledge diverse modes and media

This principle acknowledges the role of multimodality in meaning making. Kucirkova et al. (2019, p. 7) argue that "multifunctionality of new technologies implies that they can be used for writing a story but also for adding photographs, digital drawings, hyperlinks and audio recordings to the written text." Teachers and students may annotate pictures inserted on interactive whiteboards or flat-panel flipcharts and they may also add videos. Crescenzi, Jewitt and Price (2014, p. 88) argue that "touch is increasingly foregrounded and designed within technology and human computer interaction research as an interactional mode." Multimodality, however, changes the teaching paradigm and challenges us to re-think how teaching and learning are conceived, approached and practiced.

Recognise the affective, embodied and material dimensions of meaning making

This principle aims to "allow for students to explore what texts mean to them and share emotional, personal and situated responses" (Burnett et al., 2014, p. 163). I agree with Grant and Basye (2014, p. 3) who argue that "students in the same grade have different knowledge base levels and learn at different rates. They are more likely to succeed academically, emotionally, and behaviourally when they are supported as individuals." Personalised learning "depends on the expertise of teachers to support students' meaningful goal-setting, accompanied by the provision of an engaging curriculum that offers timely strategies and learning experiences to address student goals" (Prain et al., 2013 p. 672).

Encourage improvisation and experimentation

This principle recommends the fostering of creativity by improvisation and experimentation in the production of intelligible text. It recommends a good combination of planned and spontaneous literacy experiences in a safe environment for students. Students in my dataset were taught various competences whilst engaging in different subject areas. In this way teachers

enabled the children to reach a number of digital literacy outcomes (https://digitalliteracy.skola.edu.mt/).

Use entertaining pedagogies

This principle recommends that educators should value students' home literacy experiences and the ways in which learning connects home and school. This is similar to Pahl & Rowsell (2012, p. 86), who argue that we should be mindful of what children learn at home and how literacies are being constructed. They argue that "at home movement across sites and across nodes may be happening much more quickly and to a different timeframe from that of school" (2012, p. 86).

At home, children spend time in unstructured play, which may enhance their creativity, problem–solving and other competences. Similarly, at school they may record their own voices and search videos about topics of interest including animations. What counts as literacy is beyond the mere chalk and talk, paper and pencil. Active learning involves meaningful games, solving problems and exploring. Burnett & Merchant (2018) argue that despite the fact that there are some challenges in using digital media in playful pedagogies and that play can be unruly, "the payoffs in terms of learner engagement and enjoyment are considerable" (p. 74).

Create opportunities to work with the provisionality of digital media

This principle acknowledges that meaning must be generated through different texts, contexts and situations. Children may take photos using the tablet's inbuilt camera, capture images, search for content online and use an e–book creator app to create their own book. The use of the camera together with open–ended apps also facilitates a flipped classroom model where "the direct instruction is offloaded to the individual space, and the class time is used for something else" (Bergmann & Sams, 2016, p. 5). This model, which shifts from passive learning to active learning, creates several possibilities which were previously difficult to achieve without the use of technology. Immersive technologies like Virtual Reality (VR) and Augmented Reality (AR) are sweeping into our classrooms (Billinghurst & Duenser, 2012). Augmented reality can bring pictures to life, and this is evidently facilitated by using tablets' cameras.

Provide contexts that facilitate criticality

This principle highlights the importance of creating an environment in which students feel safe and supported so that they can experiment and collaborate with each other in the production of meaningful discourse.

Neuman & Roskos (2010) recommend that classroom teaching should provide a rich and dynamic context for both academic learning and real-world opportunities where children can experience problem-solving situations and, using their multi-literacy capabilities, can strategically adapt their purposes for literacy in different situations

Promote collaboration around and through texts in negotiating meaning

This principle involves spontaneous, loose, ad-hoc collaboration which may allow inquiry-based learning as well as right collaboration. A significant technological change that led to further collaboration was the development of devices that were smaller and more portable than previous digital tools (Murphy et al., 2014).

The social nature of meaning making enriches the literacy experience of children. Lawrence (2018) found out that tablets, in general, seemed to invite social interaction and that "many of these forms and types of play have been adapted from typologies of traditional play" (p. 211).

Methodology

The research reported here was carried out on a span of 20 lessons observed in a school (from February until June 2016). The child participants in the current study (N = 10) were Year One students from two different classrooms who ranged in age from 5 to 6 years old (M = 5.2 years).

The choice of the school (which I shall be referring to as 'St. John Paul') was based on numbers and on the willingness of teachers and students to participate in my research, as well as their predisposition towards technologies and digital resources. The student population was not diverse with regard to ethnic background. In fact, the background of the majority of students was working-class and Roman Catholic. My perception about the socio-economic status of children is derived from my conversation with parents and with the

Head of School. The school used phonics but did not follow a particular phonics syllabus.

The design of the research was a painstaking exercise. I had to create a methodological framework which would relate to children's experiences whilst respecting their views and avoiding what Christensen & James (2000, p. 12) describe as childhood and children's lives being explored through the eyes of adults.

Two teachers, Ms Yosanne and Ms Roberta (all names are pseudonyms) volunteered to participate in my study. They were young, relatively enthusiastic and hardworking. They had natural confidence to teach, sing and motivate the students, and had the disposition to teach young children. Both were university graduates, one of whom had graduated in Education.

Findings and Data Analysis

In this study, I examined technology-mediated practices in these two classrooms in order to identify how far Burnett and Merchant's (2018) nine principles are embedded into their teaching and learning and explore the gaps in knowledge and practice that might be evident in order to inform an understanding of future professional needs.

In this analysis I also draw on Burnett (2016), who recommends opportunities for children to use digital media for purposes that make sense and matter to them and at the same time meet the demands and challenges of living, learning and working in a digital society.

Recognising children's experience of new media while building on their linguistic and cultural repertoires

Despite the fact that my study was conducted with young children of the first year of primary school, it was evident that students had been exposed to new emergent technologies and learning environments. The practice of touching icons and zooming on the tablet screen which provided direct navigation came intuitively.

In this study, I developed a profile of each participant. This was an important starting point for child-centred education. Children told me that they had

tablets at home which they used to watch their favourite videos (*Peppa Pig, Dora the Explorer* and *My Little Pony*). It was evident that many of them were comfortable using tablets. They identified with their favourite characters and they also associated lesson items with them. In Observation 15 (time 1.31) the child saw a rainbow on the screen and instinctively called it rainbow-dash, one of the main characters in *My Little Pony*. This corroborates Ehret's statement (2016) that:

> The continued dematerialization of media compels thinking about new media literacies beyond the glass finality of the screen's surface, engaging not only with material modes on that surface, but with digital presentations of embodied realities in digital bits and bytes. (p. 141)

Children in my data set had access to a multitude of engaging early learning applications. Regrettably, this was not the case with apps in Maltese. One of the few apps for Maltese language learning for early years was *Naqra Naqra*. *Naqra Naqra* consists of word-to-picture matching and aims to develop phonemic and syllabic awareness by getting children to note similarities in the sounds of different words by juxtaposing them to one another. This app was used during Observation 7 by Ms Roberta, who understood its potential benefits and took the opportunity to use it. Maltese is a phonetic language in nature but learning phonemics is always an essential part of language learning. This app also enabled the juxtaposing of individual sounds (phonemes) in order to form words.

Clark & Luckin (2013, p. 21) state that in their study, "the devices enabled them, as teachers, to promote independent learning, to differentiate learning more easily for different student needs and to easily share resources both with students and with each other." The *Time2Read* app was used to teach digraphs and enabled children to identify letters and sounds. The activities were tailored to the children's needs, and the children could be taken through the learning process step by step, working at their own level. The levels of difficulty were well balanced, and the small steps ensured that the child progressed successfully through each level.

Learning Support Educator, Ms Leanne, was hopeful that such possibilities would enable her to monitor Jennifer, the pupil assigned to her, and to see whether she was struggling at any particular level.

Providing opportunities for children to use digital media

Burnett & Merchant (2015) state that the visual design and alphabetical representation are integral elements of multimodality in meaning making. During Observation 14 the teacher asked the students which letter starts with that particular sound name, which subsequently they had to colour. This lesson, which involved listening to words, random generation of words and touch screen facility, enabled children to strengthen and develop communication, literacy and digital competences. It also gave them joyful emotions while learning.

As expected, audio material proved to be very beneficial to the learning of phonics. Ms Roberta preferred to use several off-the shelf apps, such as *Phonics Pumpkin*, to reinforce letters and sounds. Another pedagogical affordance is the facility to use QR codes. The QR code lesson (OB 8 Ms Y) would not have been possible without the use of touchscreens. QR code generating allowed the teacher to input the information, which was related to a specific QR code.

During Ob5 13-4-2016 Ms Y video 6 – Translated, Ms Yosanne used *Quizlet*. *Quizlet* is an open-ended app which allows teachers to create an activity and students to manipulate it. The use of *Quizlet* in this classroom was a demonstration of good practice of tablet-mediated teaching and learning.

During Observations 14 and 15, the teacher could project the students' work on the screen. Children could produce content on their tablets and show it to the class. Presenting their own work is an important competence and is also envisaged by the European Future Classroom as one of the learning zones (https://fcl.eun.org/learning-zones).

Creating a safe environment where children feel encouraged to take risks and experiment, and to consider critically the practices in which they engage.

This principle encourages improvisation and experimentation as well as the need to produce. During Observation 12, the children used more open-ended tasks, with the aim to master an editing software. In this case, children used the off-the-shelf app 'Drawing Desk: Draw & Paint Art', which consisted of tools such as 3D brushes, several other brushes, shapes, typography tools, realistic brush tools, smooth eraser, ruler, smudge tool, water colour, and paint roller.

Another tablet facility which the teachers in my data-set made use of was the camera, which enabled students to capture images of artefacts they deemed relevant and store them. In general, teachers appreciated the opportunities that tablets can provide, such as using the camera, sounds, graphics and other functionalities. The built-in input devices (keyboard, camera) and output devices (sound, screen), as well as network connectivity, make the tablet productive and useful on field trips and other out-of-school activities.

Using playful approaches

Although play (and indeed digital play) is a highly contested term, this criterion led Ms Yosanne to suggest during (Ob 5 13-4-2016 Ms Y video 2 – Translated) that there can be a lot of learning through play and there are many opportunities for learning through play that are afforded by digital media and technologies.

Observation 11 enabled the pupils to interact with each other. They had to count the marbles and take photos of the numbers, insert the picture on *EduCreations* and then write down the word.

The main objective of this lesson was to teach numbers in Maltese, and it combined, in a very interesting way, tactile digital (touch screen facility) with non-digital (numbers written on paper and balls) methodology. The pupils were firstly required to understand the number in Maltese, then select it, add it to *EduCreations* using the camera facility and finally pick up the right amount of balls in accordance with the given number.

In a way, swiping the digital letters on their tablets, as in Observation 4, compared to moving real-life objects, such as the jigsaw puzzle, since to compensate for the lack of physical tangibility, this software used skeuomorphic visual design to simulate flipping non-digital flash cards.

Promoting collaboration

In this study there were no concrete examples of collaboration between students but rather there were some sharing practices. The social nature of meaning making enriches the literacy experience of children. Lawrence (2018) found out that tablets, in general, seemed to invite social interaction and that "many of these forms and types of play have been adapted from. In my

first observation students worked in pairs wherein each member had a card displaying the 'ch', 'sh' or 'th' sounds and they had to find the picture of an object whose name begins with that sound (e.g. chocolate, children). Subsequently, they took a photo of that picture and uploaded it on *EduCreations*. Finally, the children wrote the word next to the picture using their iPads. This exercise was repeated for all digraphs ('sh', 'th', 'ch'). During Observations 14 and 15, texts on tablets were also projected onto a large screen. Children appreciated the value of visualising particular content where material was shared using Apple TV.

My own experience bore a strong resemblance to that of Clark & Luckin (2013, p. 21), who stated that, throughout their observations, teachers, " ... felt that the use of iPads in the classroom caused them to rethink their professional role and facilitated greater collaboration between themselves and students." In my case study, Ms Yosanne and Ms Roberta collaborated with one another and learnt from their own experiences. For them, tablet-mediated teaching and learning was a new challenge which brought them together in a joint effort to share experiences and resources for the benefit of the pupils. Ms Yosanne (Diary Ob 12) discussed how tablets could improve her experience in e-twinning, empowering students to produce something on their own. She told me how, although the e-twinning platform was used to share digital content, much of the educational material produced by the children was still what she described as "traditional." Tablets, therefore, were not just a change in medium but an opportunity for children to create, develop and share their own content.

Recommendations

For my recommendations, I draw on Burnett and Merchant (2018) and explore how their Charter recognizes the way in which literacy is changing in the digital age, and the multiple lenses that need to be brought to bear on literacy in this context. Subsequently, I also outline my recommendations in terms of future research in educational practice and policy.

a. Educators have to acknowledge that the definition of literacies should not be restricted to making meaning using alphabetic script, and that literacies themselves can change. The ubiquity of technologies in the lives of many young children suggest that they are not new technologies anymore and that children cross seamlessly the digital/non-digital, online/offline and material/immaterial boundaries. Educators need time to understand the benefits of technologies in teaching and learning. In

my study technologies enhanced children's learning and also enabled them to hone the skills they need in today's society, such as when they took photos and used the app *EduCreations* for annotations. There are many great tools, such as *Flipgrid*, which allow students to have a great space to capture their thoughts and share their creativity via videos or pictures.

b. Educators have to acknowledge that the digital and non-digital are two realities that reframe the daily lives of children, who are able to seamlessly move from one mode to the other and from the material to the immaterial. Literacy is not only about reading and writing because there are various other literacies like media literacies and music literacies which need to be taken into consideration. The argument that Burnett and Merchant (2018) put forth is that the definition of literacies should not be restricted to making meaning using alphabetic script, but that even literacies themselves can change. Digital literacies are important to enable us to analyse critically online content, create, communicate and collaborate. The uses of tablets in my study show how these devices enhance children's learning and also enable them to hone the skills they need in today's society, such as when they took photos and used the app *EduCreations*. Teachers in this study, therefore, recognised that literacy was indeed being transformed in the digital age.

c. Educators have to utilise students' cultural and linguistic experiences for a richer teaching and learning experience. Children told me that they had tablets at home which they used to watch their favourite videos. It was evident that many of them were comfortable using tablets. They identified with their favourite characters and they also associated lesson items with them. Teachers in my study did their very best to find apps which are suitable not only to children's language development but also to their understandings and interpretations of social contexts and life experiences. However, many off-the shelf apps included words and pictures that were unfamiliar to Maltese students and definitely did not "link to students' everyday lives and cultural history" (Pahl & Rowsell, 2010, p. 3).

d. Educators have to allow for the improvisation necessary to support student creativity whilst also ensuring their safety and well-being.

Students have to develop the competences to *analyse critically* online content. This entails access to the internet in a safe environment which enables students access online information. Limiting internet access by means of white-listing, for instance, would definitely not create a learning environment where students can think critically and engage with a global community. Linking screen time to addiction is contested (Livingstone et al., 2019), but the overall perception of teachers was that tablets were increasing screen time, leaving less time for non-digital play and study. Teachers, parents and carers should strike a good balance between allowing a certain amount of freedom, independence and adventure, while at the same time their role should not be too rigid but rather focus on helping students to self-regulate.

Conclusion

In view of the COVID-19 pandemic and school closures, educators had to change to online teaching, requiring them to explore various technologies and digital platforms. Understanding teachers' difficulties in integrating tablets within their teaching is crucial. I would like to draw on Ertmer et al. (1999) to describe two types of barriers to technology integration: first-order extrinsic barriers and second-order intrinsic barriers. First-order extrinsic barriers refer to technological issues such as unreliable network connections, inadequate training in using technologies, prescriptive and restrictive curricula which do not allow students to experiment and hinder interdisciplinary learning which is imperative for transversal competences, and the use of digital media across subjects. Another difficulty is also the size of classrooms. The classes that I observed were relatively small and this enabled teachers to give individual attention to their pupils. However, this set me thinking about the challenges of tablet learning within a larger context.

Second-order intrinsic barriers are described as "intrinsic to teachers and include beliefs about teaching" (Ertmer et al., 1999, p. 54). This work acknowledges the pedagogical possibilities of tablets for literacy learning are and the challenges faced by educators in embedding them in their teaching and learning. Subsequently, it explores how the principles of the Charter of the 21st Century Literacies (Burnett et al., 2018) can be beneficial to teachers' pedagogies in literacy learning and hopefully may address some of these challenges. Finally, teachers should also be focused on equipping students with

the digital competences required for the 21st century. As Santori et al. (2018) accurately put it:

> Researchers and teachers must be prepared to help all students develop digital literacies, and to leverage engagement with technology in ways that are shown to enhance students' content knowledge while also gaining technological skills essential for participation in our global society. (p. 30)

Notes on contributor

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