Jill Dunn and Tony Sweeney (2018)

Writing and iPads in the early years: Perspectives from within the classroom

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Abstract

Writing is a complex and effortful activity and recent surveys indicate that fewer children are enjoying writing or engaging in writing outside of school. Yet compositional writing is a part of the primary curriculum and is an essential part of education. This small-scale international study aimed to garner the views of primary school teachers and children on using iPads in teaching compositional writing and how this writing differed from using paper and pencils. Three teachers and classes of primary school children in Northern Ireland and in the Republic of Ireland participated in the study. Individual interviews with the teachers, focus groups with the children and child-led virtual tours of the iPad were all used to gather perspectives. All participants reported on the benefits of using iPads to teach compositional writing. These included fun and enjoyment, greater choice and creativity, the value of multimodal communication and assistance with spelling. However, all participants also advocated a balanced approach to the teaching of compositional writing.

Practitioner notes

What is already known about this topic

- Primary school teachers and children are positive about the impact of using iPads in the primary classroom in terms of enjoyment and motivation.
- There is some evidence of the particular affordances of the use of touch screen technology in teaching literacy in the primary classroom.
- There is a need for multimodal writing using touchscreen technology in primary classrooms to reflect the technoliteracy practices in children's out-of-school lives.

What this paper adds

- This paper is an international study and has garnered perspectives from within the classroom of both adults and children on the use of iPads in compositional writing including unique methods in capturing the voices of young children in virtual iPad tours echoing the Mosaic Approach.
- The paper presents specific views on how the use of iPads impacts the teaching and learning of compositional writing from the perspectives of those whose job it is to teach compositional writing and from those who are expected to learn it.
- The compelling voices of young children in regard to the use of iPads in allowing them more choice and creativity in their writing, the valorisation of visual and verbal approaches in combination with writing, the importance of the iPad in assisting children with spelling and their views on a balanced approach in the classroom.

Implications for practice and/or policy

- Whilst teachers were positive about the use of iPads in teaching compositional writing, there is still an awareness of the privileging of print in the classroom which may constrain the possibilities for children's multimodal learning opportunities.
- The children were vociferous in their views around the potential of using iPads in assisting them to engage in multimodal writing that was more exciting and meaningful.

There is an urgent need to hear these voices and for teachers to incorporate the use of the iPad more in the teaching of compositional writing.

Introduction

Learning to write is considered essential for academic achievement and for success beyond school (Beam & Williams, 2015). Indeed, writing, along with reading, has traditionally been acclaimed as one of the twin peaks of literacy and one of the central gains from education (Beard, 2000). In a recent survey in the UK by the National Literacy Trust of pupils aged 8 to 18, just over 50% of children and young people said they enjoyed writing either very much or quite a lot. However, that leaves the other 50% who only enjoy writing a bit or not at all (Clark & Teravainen, 2017). It is reported that fewer children are engaging in daily writing outside of class but when they do write, it is technology based formats which dominate this writing (Clark, 2016). So whilst print texts and print literacy is still dominant in many schools (Loerts & Heydon, 2017), children themselves are appropriating and using digital technology for their own purposes in their daily lives. Children want to be involved in literacy activities that are authentic and have 'real-worldliness' (Tolentino & Lawson, 2017, p62) with deep, personal meaning and for many children this genuine, meaningful engagement happens with the use of digital technology The central role of digital technology in the daily life of children and their families (Neumann & Neumann, 2017) emphasises that children's interactions and experiences with digital texts can no longer be ignored as they are an integral part of their repertoire of activities (Aldhafeeri, Palaiologou & Folorunsho, 2016). Consequently, there is an urgent need for contemporary teaching practices to change in order to bring this relevance to children's learning about writing into the classroom.

There is a growing body of research that is beginning to identify some of the affordances of digital technology, and in particular tablet devices, within literacy. For example, in a recent study, it was reported that story making apps enable children to incorporate sounds, images, text and design into their stories which can enhance children's creativity (Kucirkova & Sakr, 2015). Technology mediated writing instruction has also been shown to enhance shared writing time where children can share and discuss their writing with classmates and appropriate strategies they learn from others to support their own writing endeavours (Beam & Williams, 2015). The use of tablet devices is also reported to enhance motivation and independence, which is often lacking in the teaching of writing, particularly with those

children who are more reluctant learners (Gray, Dunn, Moffett & Mitchell, 2017; Flewitt, Messer & Kucirkova, 2015). There is also an emerging evidence base on how digital technology is transforming writing in the classroom and, key to this, is our understanding of what we mean by writing and written texts.

Writing can be defined as the use of visual marks for communication and expression (Olsen, 2009). However, the concept of text is becoming more complex and now includes multimodal and screen texts (Levy & Sinclair, 2017). So the term 'digital literacy' can help to 'redefine conceptualisations of literacy as an ability to understand the many sign and symbol systems in existence with texts today as well as the ways in which children make sense of them (Levy, 2011, p152). Loerts and Heydon (2017) suggest that all modes have equal potential, but each has its own affordances that make some modes better for specific purposes than others. Edwards-Groves (2011) asserts that a contemporary focus on writing highlights how technology use enables new possibilities for creativity in multimodal text construction and meaning making. Therefore, a focus on how the teaching of compositional writing is transformed by the use of touch screen technology is not only timely but essential as educational provision seeks to move forward in the new media age and central in this are perspectives from within the classroom**.**

The introduction of tablet devices into schools is not without its controversies (Clark and Luckin, 2013) and Merchant (2012) suggests that such technology can disturb the 'fragile ecology' of classroom life by opening up the possibilities for different kinds of learning, communication and interactions. Indeed, it is suggested that hesitation towards the use of digital technology is not due to a lack of technological resources, rather it is due to the teachers' aptitudes and attitudes (Aldhafeeri et al., 2016). Burnett (2015) further suggests that while many teachers may be active participants in digital technologies in their own lives, they may see such practices as inappropriate in the classroom setting. However, many early childhood educators do recognise the potential benefits of using technology with young children but lack pedagogical and technological knowledge. They report confusion around when and how to integrate technology into their teaching (Fenty & McKendry Anderson, 2014). This confusion is further exacerbated by the contradiction between curricula that promote multimodal literacy and the government drive on high stakes testing and accountability which focus on print based texts (Loerts & Heydon, 2017).

The other key stakeholder in the technologisation of classroom practices is the child, and research which is concerned with young children's use of tablet devices in the early years must heed the voices of those young children who are central in the debate (Dunn, Gray, Moffett & Mitchell, 2016). There is a burgeoning recognition of children as competent social actors who are experts in their own lives, living their childhood now (Clark & Moss 2011). Indeed, consultation with children can contribute informed knowledge about the issues under consideration (Dunn, 2015). After all, as Loris Malaguzzi claimed, 'things about children and for children are only learnt from children' (Edwards, Gandini & Forman, 2012, p30).

The study

This research originated from a previous study by Gray et al. (2017) in which one of the authors was a co-researcher. This prior study on 'Mobile Devices in Early Learning' gathered teachers' and children's perceptions on the use of iPads in the early years classroom over a two year period. Whilst the study focused on both literacy and numeracy, the findings on literacy emphasised how the use of iPads in the teaching of compositional writing was particularly beneficial in allowing children greater choice and creativity (Dunn et al., 2016). Therefore, this use of iPads in compositional writing presented itself as a topic which warranted further investigation. A small amount of funding (£3000) was secured through the Standing Conference on Teacher Education North and South (SCoTENS) which is a network of institutionson the island of Ireland with a responsibility for and interest in teacher education. This funding allowed for some collaborative research between Northern Ireland and the Republic of Ireland which, although they are on the same island, are separate countries with different schooling systems and different primary curricula. Policy in both jurisdictions highlight the importance of capitalising on the use of digital resources especially in the crucial area of literacy. Yet, in the current climate of decreasing education budgets, lack of funding for training and support and increasing pressures on teachers, it is not clear if the rhetoric of policy is translating into the reality of the classroom.

Therefore, the aims of this small scale study on writing and iPads in the early years were to ascertain the views of teachers who were using iPads in the classroom for writing, on the benefits and challenges of using iPads to teach writing in the early years and also to

ascertain the views of the other key stakeholder, the children, on their use of iPads for compositional writing in the classroom.

Methodology

The research took a constructivist approach viewing people as dynamic, social beings who interact with others to construct joint meanings within a given context (Greig, Taylor & MacKay, 2007). The research also took a children's rights perspective recognising article 12 of the United Nations Convention on the Rights of the Child (UNCRC) which explicitly highlights children's capacity to form their own views, to express them freely and to have them carry weight in all matters affecting them (United Nations, 1989). The class teachers and children of three primary school classes in Northern Ireland and three primary classes in the Republic of Ireland participated in this study. The children in the study were aged 6 to 7 years old. These six schools were selected from the school placement partner schools of the respective institutions, and were chosen on the basis of available infrastructure, commitment, and prior working relationships with the researchers (Miles, Huberman & Saldana, 2014).

Preliminary planning visits were made to the six schools, where the purpose of the research was explained and the teachers were asked to plan a compositional writing lesson which would involve children using the iPad at any stage of the writing lesson. Therefore, the children could be using the iPad for planning their writing, to write their content or to present their content which they may have written in their books. All of the schools had already been using iPads and were familiar with using a range of apps and it was up to them which app they chose to use for the lessons. Each researcher returned during the autumn and winter of 2016-17 to observe the compositional writing lesson with pupils which involved the use of an app on the iPad. The apps used by the children in the lessons included Book Creator, My Story, Puppet Pals and SonicPics. Following this lesson, a semi-structured one-to-one interview, which involved careful probing and attentive listening (Mears, 2017), was carried out with the class teacher to investigate their use of iPads in teaching compositional writing and garner their views on the benefits and challenges of incorporating this digital technology.

Focus group interviews were also carried out with groups of six children in each school. These children were selected by the class teacher on their perceived potential to enjoy engaging in discussion with both their peers and the adult researcher and they were carried out in an area outside the classroom recognised as a natural setting by the children (Cohen, Manion & Morrison, 2011). The questions focused on the different apps that children used in compositional writing and their views on how and if these apps assisted them in learning to write. The focus group also included some practical child-friendly activities such as sorting statements in an eclectic approach to data generation which allows for both verbal and non-verbal responses (Merewether & Fleet, 2014).

These focus group interviews with children were augmented by virtual tours of the iPad, based on the Mosaic Approach (Clark & Moss, 2011) where child-led tours were considered an important piece of the mosaic which contributed to the overall understanding of the child's perspective. These tours were provided by one child from each class to show their understanding of its features and to gain further perspective on its use in the child's experiences of compositional writing.

Following transcription of the data, thematic analysis was used to identify, analyse and report themes from within the data. Braun and Clarke's (2006) six-phase approach to thematic analysis was followed: the researchers familiarised themselves with the data, initial codes were generated, and there was searching, reviewing and defining of themes before the research report was produced.

Findings

The teachers' and children's views are presented under key themes which were identified within the data. For the purposes of anonymity and confidentiality, each school was allocated a numeric code from School 1 (S1) to School 6 (S6).

Teachers

Fun and Engagement

Most of the teachers talked about the fun and enjoyment experienced by pupils when using an iPad in the classroom.

It is just so much more exciting for them. They really love it and are really enthusiastic (S5).

Teachers felt that activities on the devices were not seen as work by the pupils.

They are brilliant. I mean, they….I think because it is an iPad they see it more as a game than work (S2).

Choice and Creativity

Teachers mentioned the opportunities for choice and creativity available to the pupils when using the iPads. This included the addition of images, colour and drawings as well as the ability to record their voice and add speech bubbles in apps such as Bookcreator and My Story.

Whereas on an iPad they have more choice. Even the fact that they can bring in images and different colours. They are not spending all the time drawing or creating that way. They have the additional things to add the quality to it (S1).

Pupil Cooperation

Pupils mostly worked in pairs or small groups when using the iPad as part of writing lessons. Teachers commented how mixed ability groups helped with pupil confidence and facilitated participation.

Everybody has success with an iPad. It is there to scaffold them. The fact that we would do a lot of our work in pairs. A lot of my groups are mixed ability though I let them choose groups this time. It just depends on what you are doing. So, they could be similar ability, mixed ability but they always have another person there to support them, as well as teacher input (S3).

Home Links

All of the teachers talked about the how the children's use of iPads in school for writing created links and opportunities for their use at home.

Some parents would mention in teacher interviews that children have asked them to download apps at home. That isn't exclusive to writing. It can be other apps we use for teaching but there will be…Bookcreator will be one they mention, and Pic Collage because it is one that people will already have on their phones. They will use that to write (S2).

A little girl said to me the other day that she was going to download and try and make books herself (S6).

Reluctant Writers

All of the teachers discussed the advantage of iPads in engaging a range of ability levels, including reluctant writers.

I have had…definitely much better pieces of writing from reluctant writers than I have had. Like, the class in the years without the iPads and the reluctant writers, you would get very little from them. But the year when the kids had the iPads, the reluctant writers, they were writing quite a bit and they were taking more pride in their work because they were dead quick at typing (S4).

I would say a big thing is motivating your reluctant boys. It certainly helps that way. Some boys, when they get pencil and paper, that just turns them off straight away. It really engages them and it is so relevant to them nowadays. It certainly helps that way to inspire them (S1).

The S2 teacher mentioned the value of the use of speech and recording of oral stories in engaging a range of learners.

A lot of our children have speech and language difficulties so the chance to hear and record their own voice is useful for them. They are then able to talk about it and use their voice, which is less threatening than writing (S2).

Autocorrect and spelling was also mentioned by other teachers.

A lot of them who have difficulty with spelling, it kind of makes it easier for them. If they need to go back and edit, they can on the iPads (S5).

They probably would not have picked up the difference between 'a' and 'an'. Little grammatical errors. The predictive function on the iPad does suggest little bits and pieces which kind of pushes their literacy a little bit further to be honest (S6).

A Balanced Approach

Four of the six schools mentioned the importance of having a balance between iPad and paper based writing in their classroom.

I think it is really important to get the balance right. You can't do everything on an iPad. Well, you could but you still need to be working on paper. It has to work alongside and enhance what you are doing (S1).

…you need to be fairly traditional as well. You need to learn to write and writing happens with paper and a pencil. I think that in terms of pencil grip and that sort of thing (S2).

One teacher said that some of their pupils preferred writing on paper.

A couple of kids said "Can I just write this on paper?" They just preferred it. My fear has always been, with iPads, like any technology, the whole mechanics of writing sometimes can teach kids to learn spelling as well. So I hope that doesn't get lost as well. That is why I try and have a balance of writing and iPad because I think if they were constantly writing their stories on iPads then the spelling wouldn't be as good and handwriting as well (S4).

Pupils

Fun and Enjoyment

Pupils in all of the schools talked about the fun and enjoyment they experienced when using iPads in the classroom and that it helped them to enjoy writing in school.

If you try and write about something on a piece of paper it is like "Ugh, this is so boring! I don't like this" but on an iPad its "This is so fun!" (S1, Focus Group).

The iPad helps you enjoy writing in school (S6, Focus Group).

Choice and Creativity

Pupils in three of the six schools talked about the range of options available when producing pieces of work using an iPad.

I like to use PicCollage because you can search up different photos, you can change your writing, and you can do lots of different things to make it look nice (S1, Focus Group).

Pupils said that they liked the way they could choose to modify various elements within apps including page colour and background, and aspects of text such as font, colour and size.

[Explain Everything] We can make our own shapes, and we get pictures off Google and we can put them on to this. On a big white background that we can cut them out like we did on Puppet Pals and we can, like….have different coloured backgrounds and have writing up at the top and it is just a really fun app to help us get some education (S1, Virtual Tour).

If you just use pen it doesn't give you effects on the thing. You can do smooth, you can do crumbly, you can do different thickness… (showing different pen effects on the iPad)(S4, Virtual Tour).

Visual Communication

Four of the six schools talked about the potential of visual communication using an iPad for writing.

The S1 pupil taking part in the virtual tour said that they preferred using the iPad for writing, and when asked why replied "because with the iPads I can have photos". Similarly, many pupils talked about using photos on their iPad.

You can add photos, different things on it. You can add text and you can draw on that photo (S4, Virtual Tour).

The pupil referenced Bookcreator and talked about how they enjoyed adding pictures to their work on this app.

Pupils also appreciated being able to add in visual items such as photos, emojis, stickers and illustrations without having to draw.

You get to put in stuff that you can't do when you draw because it's easier. Stuff might be harder. You can just put in stuff which is hard but you don't have to draw it (S3, Focus Group).

[Bookcreator] It is easier with the pictures because we don't have to make it and draw it because it would take us for ages (S6, Focus Group).

Verbal Communication

Five of the six schools talked about the ways in which an iPad facilitated different ways of communicating. Alongside visual means of communicating, the pupils in S1 were able to record their voices and add this to the visual aspects of their work using apps such as Puppet Pals and Explain Everything.

We used hedgehogs and we have almost recorded it. We have cut out our hedgehogs. It is a bit like PuppetPals. You cut out things and you use with your partners. Then you get an arrow and you move around and tell facts (S1, Focus Group).

A pupil in S3 said that:

You aren't using a pencil, you are using your voice (S3, Focus Group)

Speed and Handwriting

Pupils in four of the six schools mentioned the speed and convenience of producing pieces of work on an iPad compared to paper.

It (using an iPad) is quicker than writing (S5, Focus Group).

When you use your pencil, your pencil breaks a lot but when you are typing the iPad doesn't break (S5, Focus Group).

A number of pupils talked about how their hands would get sore with traditional writing.

Sometimes when you write too much your hand can get sore but on the iPad you can type or use your voice (S3, Focus Group).

Some pupils talked about typing instead of writing using a pencil.

I like the iPad more because you don't have to write it all …….. I actually enjoy typing (S3, Focus Group)

Balanced Approach

Pupils in five of the six schools talked about their preference between writing on paper and using digital technology.

I kind of like both but maybe on different days I might get tired or something and I would prefer to use the iPad. Most of the time I would prefer to use iPads actually, they are best.

One pupil in S4 said that it was different writing on paper because it helped improve handwriting, and the whole group agreed that this was important.

Your handwriting, because it never gets better if you keep using the iPad (S4, Focus Group).

Spelling

All of the schools mentioned spelling, predictive text and the autocorrect function on an iPad.

When you are spelling something, you might get something wrong whereas in the iPads it shows the words. If you want the word then that word comes up (S1, Focus Group).

Pupils recognised that being able to spell was important and felt that the iPad helped with their spelling.

It helps us with spellings…you have to know your spellings. It is really important (S6, Focus Group).

One way in which the iPad addressed spelling was by placing a red line under incorrect words.

If you do a spelling mistake on the iPad it will put a red line underneath it and will let you know that it's not right (S3, Focus Group).

The iPad also suggested words to help pupils choose which word they wanted.

It helps me because sometimes when you are stuck on a word you could…you might have the word…like…it will be able to come up on the thing on top (S4, Focus Group).

Discussion

In the face of falling numbers of children engaging in writing outside of school contexts and a lack of enjoyment of writing by many children (Clark & Teravainen), set against government policy to raise standards in all aspects of literacy including writing, there is a clear need to consider how digital technology might address both of these challenges and be utilised in authentic learning spaces. The pencil has always been considered the main

tool for writing, but considering how some children in this study find it tiring and sometimes challenging to use a pencil, we can also view it as a potential obstacle for some children's literacy development in the increasingly digitized world that children are growing up in.

Teachers' perspectives on digital technology use in writing lessons will ultimately shape the experiences and opportunities for children to use digital technology in literacy learning in the classroom (Aldhafeeri et al., 2016; Mertala, 2017). Whilst all of the teachers in this study were very positive about the potential of the use of iPads in writing lessons to engage and motivate children, including reluctant learners, and the benefits of the multimodal nature of the created texts in allowing all children to experience success in 'writing' stories through visual, verbal and print modes, they were ultimately still constrained by print-centric expectations of a primary classroom (see Loerts & Heydon, 2017). As many children are more confident users of technology, this also raises questions around a repositioning of the 'teacher as expert' role to a more fluid role where the teacher may learn alongside the child when using technology. This echoes with Edwards-Groves (2011, p63) who advocates teachers 'step slowly with their students in learning to write multimodally'. This requires a new perspective on the teacher role.

Children's perspective are also crucial as digital technology and writing are fundamental aspects of their education for their future and they are the experts in what it means to be a child and to learn in a contemporary classroom at this point in time. Taking account of their views is essential to ensure their 'access to an education which will develop their personality, talents and abilities to their fullest potential' (Department of Education for Northern Ireland [DENI], 2016, p55). The possibilities of multimodal learning opportunities were very important for the young children in this study in communicating in ways which were meaningful and enabling. The potential for visual communication was central for children. Images and drawings were not just embellishments to go along with written text, rather they were integral to the text. Photographs, drawings, stickers and emojis all played a complementary role to the written text in the eyes of the children. Similarly, verbal communication was crucial for children. Children did not appear to privilege print over visual and verbal communication. Rather, the modes all appeared to have equal potential in conveying the messages children wanted to communicate in their multimodal texts.

Yet, caution must be exercised when assuming that all children are technophiles and want to learn with digital technology as this is not always the case. Burnett et al. (2014) caution that one of the unfortunate consequences of our love affair of the 'new' is that it can create an unhealthy polarisation. However, the children in this study had a balanced view of the use of iPads in writing; they were aware of the traditional expectations of handwriting and spelling yet they see the use of iPads as being a tool to enhance their spelling skills rather than circumnavigate the need to learn to spell.

In conclusion therefore, we would argue that there is a need for a *rebalancing* in the teaching of writing and for multimodal writing to be more prominent in every classroom. This has the potential for children to be motivated and engaged and to be learning in ways that are meaningful and creative which allow them agency in developing texts which resonate with their everyday technoliteracy practices.

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Statements on open data, ethics and conflicts of interest

The data can be accessed on request by contacting Jill Dunn.

The ethical guidelines, presented by the British Educational Research Association (2011) were followed throughout the project. Ethical approval was granted by both Stranmillis University College and Maynooth University individually. Following visits to the partner schools, written consent forms from the school principals and individual class teachers were received. Subsequently, letters of information were distributed to the parents of the pupils, and only those children who returned their signed consent forms were then invited to give their own assent to participate. Participants were assured of anonymity and confidentiality throughout the project, and all participants were advised of their right of withdrawal at any stage of the process.

The authors declare no conflict of interest in the work on this project.

References

Aldhafeeri, F., Palaiologou, I., & Folorunsho, A. (2016). Integration of digital technologies into play-based pedagogy in Kuwaiti early childhood education: teachers' views, attitudes and aptitudes. *International Journal of Early Years Education,* DOI: 10.1080/09669760.2016.1172477.

Beam, S., & Williams, C. (2015). Technology-mediated Writing Instruction in the Early Literacy Program: Perils, Procedures and Possibilities. *Computers in the Schools,* 32, 260-277.

Beard, R. (2000). *Developing Writing 3-13*. London: Hodder and Stoughton.

Bradford, H. & Wyse, D. (2013). Writing and writers: the perceptions of young children and their parents. *Early Years,* 33, 3, 252-265.

British Educational Research Association (2011). *Revised Ethical Guidelines for Educational Research*. Notts: BERA.

Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology,* 3, 2, 77-101.

Burnett, C. (2015). Investigating children's interactions around digital texts in classrooms: how are these framed and what counts? *Education 3-13,* 43, 2, 197-218.

Burnett, C., Davies, J., Merchant, G. & Rowsell, J. (2014). Changing Contexts for 21st Century Literacies. In C. Burnett, J. Davies, G. Merchant & J. Rowsell (Eds.), *New Literacies around the Globe*, pp. 1-13. London: Routledge.

Clark, C. (2016). *Children's and Young People's Writing in 2015*. London: National Literacy Trust.

Clark, W. & Luckin, R. (2013). *What the Research Says: iPads in the Classroom.* London: Institute of Education.

Clark, A. & Moss, P. (2011). *Listening to Young Children: The Mosaic Approach* (2nd ed.). London: NCB.

Clark, C. & Teravainen, A. (2017). *Writing for Enjoyment and its Link to Wider Writing*. London: National Literacy Trust.

Cohen, L., Manion, L. & Morrison, K. (2011). *Research Methods in Education* (7th ed.). London: Routledge.

DENI (2016). *Children and Young People's Strategy 2017-2027 Consultation Document*, Bangor: DENI.

Dunn, J. (2015). Insiders' Perspectives: A Children's' Rights Approach to involving Children in

advising on Adult-initiated Research. *International Journal of Early Years Education,* 23, 4, 394-408.

Dunn, J., Gray, C., Moffett, P. & Mitchell, D. (2016). It's more funner than doing work: children's perspectives on using tablet computers in the early years of school. *Early Child Development and Care,* DOI: 10.1080/03004430.2016.1238824.

Edwards, C., Gandini, L. & Forman, G. (2012). *The Hundred Languages of Children: The Reggio Emilia Experience in Transformation* (3rd ed.). Oxford: Praeger.

Edwards-Groves, C. (2011). The Multimodal Writing Process. *Language and Education,* 25, 1, 49-64.

Fenty, N.S. & McKendry Anderson, E. (2014.) Examining Educators' Knowledge, Beliefs and Practices about using Technology with young Children. *Journal of Early Childhood Teacher Education,* 35, 2, 114-134.

Flewitt, R., Messer, D. & Kucirkova, N. (2015). New Directions for Early Literacy in a Digital Age: The iPad. *Journal of Early Childhood Literacy,* 15, 3, 289-310.

Gallagher, M. (2009). Ethics. In E.K.M. Tisdall, J.M. Davis and M. Gallagher (Eds.) *Researching with Children and Young People,* pp. 11-28. London: Sage.

Gray, C., Dunn, J., Moffett, P. & Mitchell, D (2017). *Mobile Devices in Early Learning: Evaluating the Use of Portable Devices to Support Young Children's Learning*, Belfast: Stranmillis University College.

Greig, A., Taylor, J. & MacKay, T. (2007). *Doing Research with Children* (2nd ed.). London: Sage.

Kucirkova, N. & Sakr, M. (2015). Child-Father creative text-making at home with crayons, iPad collage and PC. *Thinking Skills and Creativity,* 17, 59-73.

Levy, R. (2011). Young Children, Digital Technology and Interaction with Text. In M. Thomas, (Ed.), *Deconstructing Digital Natives,* pp. 151-168. London: Routledge.

Levy, R. & Sinclair, N. (2017). Young Children developing Literacy and Numeracy Skills with Technology. In L. Arnott (Ed.). *Digital Technologies and Learning in the Early Years,* pp. 69-86. London: Sage.

Loerts, T. & Heydon, R. (2017). Multimodal literacy learning opportunities within a grade six classroom literacy curriculum: constraints and enablers. *Education 3-13*, 45, 4, 490-503.

Mears, C.L. (2017). In-depth interviews. In, R. Coe, M. Waring, L. Hedges & J. Arthur (Eds.). *Research Methods and Methodologies in Education* (2nd ed.), pp 183-189. London: Sage.

Merchant, G. (2012). Mobile practices in everyday life: popular digital technologies and schooling revisited. *British Journal of Educational Technology,* 43, 5, 770-782.

Merewether, J. & Fleet, A. (2014). Seeking children's perspectives: a respectful layered approach. *Early Child Development and Care,* 184, 6, 897-914.

Mertala, P. (2017). Wonder children and victimizing parents – preservice early childhood teachers' beliefs about children and technology at home. *Early Child Development and Care*, DOI: 10.1080/03004430.2017.1324434

Miles, M.B., Huberman, A.M. & Saldana, J. (2014). *Qualitative Data Analysis* (3rd ed.). London: Sage.

Murray, D. (1984). *Write to Learn*. New York: Holt, Rinehart & Winston.

Neumann, M. & Neumann, D. (2017). The use of touch-screen tablets at home and pre-school to foster emergent literacy. *Journal of Early Childhood Literacy,* 17, 2, 203-220.

Olsen, D. (2009). The History of Writing. In R. Beard, D. Myhill, J. Riley and M. Nystrand (Eds.). *The Sage Handbook of Writing Development,* pp. 6-16. London: Sage.

Tolentino, E.P. &Lawson, L. (2017). 'Well we're going to kindergarten, so we're gonna need business cards!': A story of preschool emergent readers and writers and the transformation of identity. *Journal of Early Childhood Literacy*, 17, 1, 47-68.

United Nations (1989). *United Nations Convention on the Rights of the Child.* Geneva: United Nations.