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IPADEGOGY OF READING: DO IPADS INFLUENCE STUDENS' READING?

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Abstract

The increase in accessibility and demand for laptop computers and tablets has seen literacy in schools begin to transmogrify, due to the advances of modern digital technology. This is in part due (but not limited) to the growing need, acceptance and popularity, as the division between home use and that found in classroom learning environments is steadily diminishing. With such advances in technology also comes the evolution of the format and style of reading text. Consequently, educators are often left questioning how effective and efficient the introduction of iPads are to the engagement, comprehension and achievement of readers. Schools and institutions are faced with the issue as to whether or not the impending technology is beneficial to reading instruction and thus adapted accordingly, or accept the current method of reading instruction as being sufficient. This article outlines research undertaken by myself, a middle school teacher, in order to investigate the possible influence iPads have on student achievement and perceived learning and engagement in reading, concluding with reference to the findings from the study and implications for teachers and schools who currently, or are looking to implement iPads into the learning environment.

Keywords

iPads; reading engagement; reading achievement; reading pedagogy

Introduction

As a teacher of middle-school students (Years 7 and 8) my personal misgivings about the effectiveness of my current reading programme and its use of traditional tools (i.e., novels and written book work) combined with a foreseeable change in learning (due to the implementation of 'Bring your own iPad' into the classroom learning environment) provided the impetus for my research. Participating in research supported my incentive to gain new knowledge around my own personally effective and improved teaching practice, in order to motivate, engage and create purposeful learning experiences for my students in literacy.

Whilst many schools have adopted iPads into the classroom, their use may still be considered by some to be at a 'juvenile' stage. This led to my role as a practitioner researcher to help others and myself in postponing judgement around the use of iPads in a reading programme. Also, to uncover assumptions around their effectiveness and the possibility of providing a new way of seeing and articulating practices, values and beliefs (Menter, Elliot, Hulme, Lewin, and Lowden 2011). Thus, the creative design and implementation of a more in-depth study of classroom iPad use, not just as an e-reader, but as a tool for encouraging and supporting reading comprehension, was undertaken in order to provide knowledge around the effectiveness iPads had on student reading comprehension.

The experimental and exploratory, small scale, mixed methods study recorded the academic achievements, opinions and experiences of 45 middle school students to investigate the possible influence iPads had on student academic achievement and student perceptions around learning and engagement in reading.

Reviewing the literature- iPad or iFad?

A recent report from New Media Consortium (NMC) highlights that the tablet computer is one of the six emerging technologies with considerable potential for the area of education. The authors of the report Johnson, Adams Becker, Estrada, and Freeman (2014) state that tablet computers have their own 'niche' in education. Consequently, the adoption of iPads by education sectors is fast gaining

popularity with acclamations to date praising the device's ability to allow students to generate (rather than simply consume) material, foster engagement and encouraging collaborative learning. However, adopting technology for technology's sake does not guarantee improved learning outcomes or an enriching educational experience (Murphy, 2011).

Yet the concept of incorporating digital technology into learning is no longer foreign to those working in the wider education sector. Educators are aware of the educational and technological demands that journeyed alongside the turn of the century and the need to acquire new ways of thinking, teaching and learning. Part of the drive towards the need to impart certain twenty-first century skills and knowledge to students was the notion that certain specific skills and knowledge must be learnt in order to support students of this century, who are living in a society that is seen to be more complex, and more information, knowledge and technology driven compared with that of earlier centuries. Certainly, it is widely accepted that educators need to change, adapt and utilise modern technology to engage students (regardless of their technological skill), through creating opportunities that drive students and empower them to learn.

The introduction of digital technology via devices in classrooms, alongside both the technology and literacy requirements necessitated to teachers via the Ministry of Education, negates that there is continual assessment and research into the best methods of improving reading achievement for students learning in a twenty-first century environment (Ministry of Education, 2003). In the past five years, traditional paper-based text has been shifted to make way for electronic books (e-books or e-readers). Studies by OECD (2015) and Wright (2010) have concluded that teachers who routinely use ICT in their classrooms are more likely to integrate it, in order to meet their students' needs. However, if educators are to adopt such readers, due to the accessibility of most devices accommodating e-books, then this should only be considered if such readers lead to improving reading ability, compared with that of traditional printed text methods. Reading electronically impacts on the way an individual comprehends what is read, as web text contains additional features, thus making it different from reading printed text (Sheppard, 2011).

In addition, recent literature concludes that when instructional technology has been employed in classroom studies, there has proven to be a positive correlation between the use of educational technology and student engagement (see Bouta, Retalis, & Paraskeva, 2012). This is possibly due to the visual and multimedia functions that iPads exhibit, aiding in engaging different senses, thus continuing to stimulate the students and keep them engaged in their learning. Gibbs and Poskitt (2010) believe that incorporating technology and adapting what students may perceive as 'a leisure activity' into everyday lessons with deliberate learning purposes may be a tool in which learning becomes a more meaningful and relevant experience for less engaged students.

Methodology

The research question at the heart of the study was: In what ways do iPads, when used as an e-reader and application, influence student achievement and perceived learning and engagement in middle-school reading?

The study itself used both quantitative and qualitative data. This was achieved through measuring students' reading achievement via a standardised test—Neale Analysis of Reading (quantitative)—and their perceived learning and motivation through a survey and group interviews (qualitative). Both methods were used in order to make an informed answer in regard to the possible influence iPads had on middle-school students and their reading. As the research called upon both confirmatory and exploratory research, the use of mixed-method was undertaken in order to address both the 'what'—academic influence (numerical and quantitative data)—and the 'how' or 'why'—students' perceived learning and engagement (qualitative) aspects of the research question, providing a more comprehensive understanding of the iPad's influence compared with that of single-method approaches.

In investigating the answer to the question: Do iPads, when used as an e-reader and application in a middle school reading programme, influence student's reading achievement? data was analysed from not only the control and treatment group's reading comprehension, accuracy and rate alongside each

other, but also independent of each other, that is, the correlation the pre-test and post test results had for both groups.

Student research participants—the digital divide

Coincidently, at the time of the research design, the school in which the research was undertaken had recently established blended learning in half of their middle school classes. A total of three out of six classes were blended, meaning that those students in the blended learning classroom had access to their own personal iPads, which they were required to bring to school for learning each day. This allowed the study to follow a quasi-experimental design, whereby the study was set up with an experimental group of students (those who had access to iPads through the blended learning class) and a control group (students who did not use iPads and were not in a blended learning classroom). In order to ensure both the experimental and control groups of students were as equivalent as possible, the chosen students, both from the experimental and control groups, were within the same reading capability groups.

The five-week study involved the students participating in their current streamed reading class (separate from each other), consisting of three one-hour sessions a week. Both groups of students were studying the same novel with their separate reading teacher. The students involved in the experimental group read the novel as an e-book on their iPads and participated in the supporting reading activities relating to the novel, using different applications on their iPads. On the other hand, the students from the control group read the chosen novel as a soft-bound copy, and undertook the completion of their supporting reading activities in their exercise books using pen and pencil.

In order to test the possible influence iPads had on students' reading achievement, the study involved performing a standardised reading test at the inauguration of the study. The Neale Analysis of Reading Ability test is an individually administered test of oral reading ability. The standardised test was chosen as it allowed me to assess individual students' reading ability level in an informal one-on-one situation. The tests were also utilised due to their inapplicability in New Zealand classrooms and therefore minimal chances of the students having prior exposure to the test before the commencing of the study. The testing procedure involved establishing the students' reading level followed by students progressively reading passages aloud and orally answering comprehension questions until a certain number of errors had been made. Each passage was set at a level which increased difficulty in vocabulary and grammar as the student progressed. The time in which the students completed reading the passages was recorded and the errors made by the student, were also recorded. The standardized forms of the reading passages were presented in two parallel sets, allowing one set to be used as a pre-test and the other a post-test, at the commencing of the five-week reading unit.

Subsequent to the post-test, students from both groups completed a survey questionnaire in order to gauge their engagement and learning. The questionnaire contained 11 closed questions using a rating scale (Likert) and three open-ended questions. The questionnaire was broken down into three categorical sections. The first section related to the participants' level of enjoyment and ease of reading during the five-week novel study, while the second and third sections were specific to the participants' perceived levels of learning and engagement they experienced throughout the duration of the unit. The treatment group was administered a questionnaire relating to the use of iPads as an e-reader and application during the reading unit as well as rating their learning and engagement levels when completing the reading unit work. Likewise, the control group's questionnaire also asked the respondents to rate their level of learning and engagement during the reading unit; however, as the control group did not have access to iPads, their questions related to their ability to read the traditional printed text book and complete the corresponding written activities.

The combination of the questionnaire and tests was fundamental to the research question of determining the relationship of engagement and beliefs to reading performance. Further to the survey, a small number of students from both groups participated in semi-structured interviews in order to provide them (students) opportunity to elaborate on their responses from the survey.

Result—student achievement

A number of findings emerged from applying the mixed-methods design; from the statistical data obtained to measure the participants' reading achievement, through to the data acquired in both the survey and interviews around learning and engagement.

In order to determine the influence iPads had on reading achievement, a t-test for paired samples was used, as the same variable was tested at two different points in time. Although the average success level of the three reading achievement tests was higher for the control group (students who did not use iPads) for both the pre and post-tests, none of the pre- and post-test results for both the groups were considered to be of any statistical significance. Therefore it can be concluded from this quantitative data analysis that the three tests used to determine reading achievement used as both a pre- and post-test for the treatment group show no difference and can be concluded that iPads when used as an e-reader and application did not influence the overall reading achievement of middle school students.

Conclusions from the data analysis indicate iPads do not influence reading achievement, that is, comprehension, accuracy and rate combined. However, such results like that achieved through the independent t-test of accuracy resolve that there was a greater difference in the average reading of words per minute from the control group, compared to the treatment group, once the iPads had been used as an e-reader and application for the five-week duration. While according to the pre implementation t-test results, the average reading rate from the treatment group was lower than that of the control group. This difference became even more significant at the conclusion of the study, whereby although both the groups improved in their reading rate ability, the treatment group participants compared to their control counterparts were significantly slower in their reading rate ability, more so after the five-week study.

The culmination of the findings from this study suggest despite all intentions, through the evidential empirical data obtained via quantitative, standardised testing measures and subsequent analysis, the overall conclusion from the findings is that iPads, when used as an e-reader and application, do not influence students' reading achievement in the form of comprehension, accuracy and rate. Whilst at first glance, assumptions could be made through analysis that students who did not employ and/or have access to iPads throughout the study improved more in their overall reading achievement compared with those who used iPads; however, such improvements were not great enough to be of any statistical significance. It is clear from the statistical findings that students' achievement in the form of comprehension, accuracy and rate was not impacted either negatively or positively by the iPad when compared with that of traditional paper-based text.

Students' perceived learning and engagement

Questions relating to the students' perception of the learning that supervened during the study were divided into two subcategories. The first related to learning in the form of content and in the connection of new ideas, while the second was collated into the overall enhanced learning experience, developed confidence and understanding. Students were asked to rate their perceptions of the psychosocial learning environment of their reading class during the five-week study. The first two questions of the survey related to their surmise on how the reading activities supported their learning and how the activities supported them to connect new knowledge and ideas, whilst the other questions focused around enhanced learning, confidence and understanding.

A simple analysis of the data from the perceived learning of content and connect questions would indicate that the treatment participants had higher levels of perceived learning of content than that of the control group participants and were more confident in their perspicacity of their learning. Interestingly, the same numbers of respondents were dissatisfied with how the activities assisted their learning, regardless of which group they were in.

Likewise, the data obtained from the questions regarding students' learning through the enhancement, confidence and understanding overall depict a positive image for the set reading activities without discriminating against either that of iPads or hand written bookwork. The control group students were consistent (50–60 percent responses) in their opinion that the prescribed written activities supporting the reading text were of benefit in the enhancement of their learning and understanding of the text as well as in the developing of their confidence in reading.

However, the same data illustrates a higher level of satisfaction from the iPad using students, who were more confident that the use of an iPad as an application to complete the set activities had enhanced their learning, confidence and understanding. As such, none of the students who used an iPad in reading questioned its ability to enhance their learning or comprehension, compared with that of the control students (13–17 percent) who were of a contradicting opinion.

Questions relating to the participants' perception of their engagement that supervened during the study were based upon motivation, focus and in comparison to other reading units the participants had completed. The control group students were also questioned about their preference to working either in pairs or as part of a group when completing the reading activities. Whilst both groups of students showed equal levels of motivation towards learning during the unit, a high number of students from the treatment group (82 percent) acknowledged that they participated more during the reading unit with their iPad than previous reading units when their iPads were not available for use to them. Nevertheless, the opinion around increased participation levels was also shared by almost three quarters (73 percent) of participants who did not have access to an iPad. On the contrary, a similar number of respondents from both groups were unsure of their levels of participation in comparison to other units as well as who perceived their participation to be less compared with other reading units.

Interestingly, although the students from the control group actively reflected positively high results in their motivation to learn and level of participation throughout the unit, just over half (52 percent) admitted to remaining focused and attentive when required to complete the handwritten bookwork activities. This is a stark contrast to the responses from the treatment participants (82 percent), who, as well as exhibiting high levels of motivation and participation, also accede to actively remaining focused and attentive when completing the activities using their iPad.

Overall, the survey responses indicate that the execution of the reading activities by either iPad application or handwritten bookwork did not affect the participants' motivation to learn. High-levels of participation throughout the unit were recorded by both groups, yet the results suggest that the use of an iPad as an application may have assisted in keeping the students engaged when completing the set activities.

Conclusion

Whilst the influence from iPads was neither positive nor negative to student reading achievement, educators may wish to investigate other beneficial factors that iPads have before investing time, money and effort to implement the devices for their electronic-reader compatibility and applications. An overwhelming number of participants (82 percent) who used an iPad as e-readers for the duration of this study would recommend them. This perception is based on the devices, such as e-readers, being easier to read from and the additional features iPads employ, such as the dictionary feature, the ability for the device to pronounce to them unknown text and the selection of font size and type to suit personal reading preferences. Consequently, it is this feature e-readers encompass which allows the reader to change the font style and size which the participants of this study acknowledged as one of the features which added to improving their reading experience.

Implications for educators

The research findings and discussion raised in-depth questions around the value iPads have within the educational classroom setting. Although questions may arise regarding the iPad's minimal direct influence to student achievement in reading, certain engagement factors developed through the collaborative learning environment iPads are able to adopt must be taken into consideration. The discussion dictates that focus should not be on the iPad as a direct effect to student achievement, rather schools must acknowledge that as a digital device, iPads have the ability to promote engagement and develop social collaborative interactions which research has shown as being a strong foundation for learning and student achievement.

According to the findings from this research and in conjunction with other academic literature (e.g., Carr, 2012; Dundar & Akcayir, 2012), iPads as a digital device, due to their direct minimal influence on reading achievement, cannot be assumed to be the panacea to the current problematic reading achievement issues facing many middle-school students and teachers in our New Zealand Schools.

However, I suggest that iPads, as the newest form of digital technology, should not be viewed in such a narrow, deterministic manner. IPads, like that of previous technology and digital teaching resources, should be viewed for what they are—a teaching and learning tool. A tool which offers assistance for teachers to support readers with reading content through its various features as an e-reader, including dictation, a dictionary and the ability for readers to permute size and type of text fonts. The same reading 'tool' provides users with the ability to access text with ease any time and place, and with the ability to foster engagement and collaborative learning in order to increase student motivation and outcomes (Crichton, Pegler, & White, 2012). While the iPad as a tool provides affordances for readers as both individual learners and as part of a group, in ways which were previously unattainable, it is imperative that educators (and educational institutions) comprehend that it is themselves at the head and the heart of the classroom which ultimately dictates the effectiveness of the iPad as a tool in the classroom and for the students who use them.

Given the Ministry of Education's influence (in the form of its *Statement of Intent)* encouraging teachers to adopt digital tools, due to the potential they have to accelerate and transform the sharing of knowledge and development of skills to enhance and engage twenty-first century learners (Ministry of Education, 2013), questions arise as to the professional development needs of the teachers at the forefront of the iPad implementation. In the rapidly changing world of digital technology, teachers wishing to adopt iPads into their classes must have time to evaluate and mediate their own professional learning needs, exploring both the informal and formal ways in which to engage their students (Hargis, Cavanaugh, Kamali, & Soto, 2013) and providing opportunities for critical reflection throughout the journey (Keanrney, Burden, & Rai, 2015). Thus, if teachers are to strive to implement different approaches to teaching and learning and through these new approaches simultaneously accommodate the change in relationship between the teacher and students, then it is essential to understand teachers' learning and the role the iPad may play in this (Fisher, Smith, and Welser, 2006). Accordingly, in order for teachers and educators to create the optimal pedagogical impact from iPads, there must be the requirement of innovative pedagogical design and support from the school by allowing teachers to gain confidence through providing the time, energy and resources to explore iPads and the potential they have to accommodate new teaching and learning practices.

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