

THE INTEGRATION OF CELL PHONE TECHNOLOGY AND POLL EVERYWHERE AS TEACHING AND LEARNING TOOLS INTO THE SCHOOL HISTORY CLASSROOM

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*To prepare kids for their future, we need to start speaking the language of kids.
They're using this stuff anyway - let's teach them how to use it productively.*

(Matt Cook, a teacher near Texas)

Abstract

In recent years there has been a growing amount of research concerned with integrating mobile technologies for teaching and learning purposes. In spite of the rapid proliferation of the cell phone as an indispensable mobile tool in the lives of 21st century teachers and learners, it remains a banned item in many schools and (History) classrooms. As a result cell phone technology, such as its Short Message Service (SMS) texting function in combination with the Audience Response System (ARS), Poll Everywhere, has not been extensively explored as teaching and learning tools in the school classroom.

The purpose of this article is to, through a small scale pilot study, explore and assess how the ARS, Poll Everywhere (www.poll.everywhere.com), which is based on the cell phone's SMS function, can be integrated into History lessons to support and enhance the teaching and learning experience of secondary school learners. The article furthermore aims to establish the perceptions and attitudes of History learners (n=52), as well as the experience of the teacher after having had a first-time opportunity to integrate SMS technology and Poll Everywhere into their lessons.

The results indicate among others that although most of the participants singled out data charges as the biggest possible hindrance to its utilisation, the overwhelming majority had positive perception levels about the integration of cell phone technology and the Poll Everywhere application into their History class. The experiences of the teacher who presented the lessons were positive as well as negative in nature.

Keywords: Cell phones; SMS; Poll Everywhere; History teaching and learning; Mobile technologies; M-learning.

Introduction

Although recent years have seen a growth in the amount of research concerned with integrating mobile technologies for teaching and learning purposes (Blanche, O'Bannon & Thomas, 2014; Keengwe & Bhargava, 2013; Nuray, Hanci-Karademirci, Kursun & Cagiltay, 2012; Rau, Gao & Wu, 2008), the utilisation of basic cell phone technology to assist teachers in teaching, assessing and direct learning is still regarded as a relatively new phenomenon (cf. UNESCO, 2012:29; Nielsen & Webb, 2011:xiii, 6). This is notwithstanding the fact that cell phones are becoming increasingly more affordable and accessible to everyone in developed as well as developing countries. Recent data by the United Nations Educational, Scientific and Cultural Organization (UNESCO) indicate that of the estimated seven billion people on earth, over six billion now have access to mobile phones (compared to the 4.5 billion who have access to working toilets)(UNESCO, 2014:16).

Most of the low-tech cell phones (the so-called dumb phones) come with basic features such as a camera, clock, calendar, calculator and to-do list that can in one way or another be utilised to support classroom instruction. Additionally, cell phones offer a value texting (SMS) option that can serve as an important feature in the History class, especially in combination with the free online Audience Response System (ARS), Poll Everywhere. When utilised as combined teaching and learning technology resources, they support learner to content, learner to learner and learner to teacher interaction. Furthermore, it can support a more active, learner-centred and differentiated learning environment that contributes to increased student motivation (Markett, Sánchez, Weber & Tangney, 2006:281).

Despite the advantages these two technologies offer, Ertmer and Ottenbreit-Leftwich (2010:255) believe that the appropriate leverage of technology as an instructional tool has not yet come into its own in facilitating the teaching and learning process. They propose that a mind-shift for teachers is necessary so as to adjust their traditional pedagogic practices. Various reasons can be found in literature for teachers' perceived reticence and hesitance about integrating technology into their classroom instruction. The main obstacle for History teachers in the United Kingdom, for example, integrating technology is finding enough time to plan and explore its use (Haydn, 2001:7), while the majority of teachers in the rural communities of South Africa are concerned about an increased workload (Makoe, 2013:598). Other concerns which are often associated with the integration of new technologies are: the fear

of change, lack of training and expertise, motivation, teaching beliefs, self-efficacy, and the school culture (Makoe, 2013:589,599-560; Ertmer & Ottenbreit-Leftwich, 2010:255; Haydn & Barton, 2008:446; Bitner & Bitner, 2002:95100).

Cell phones in schools: An overview

A short overview follows to determine the degree to which History teachers abroad and in South Africa have had the opportunity to integrate the technology that cell phones offer in their classroom instruction. The utilisation of Poll Everywhere as a teaching and learning resource, for example, is dependent on the availability of cell phones and their SMS option.

Despite their greater accessibility and affordability as well as their increased capabilities to support and enhance the teaching and learning experience, cell phones are outlawed in many schools. They are generally seen as a disruptive force which distracts learners' attention from the teaching and learning process when they ring during class or when text messages are sent. It furthermore creates concerns about learners become involved with activities such as cheating, visiting inappropriate websites, "sexting", and engaging in cyber-bullying (Blanche *et al.*, 2014:16; Clark, 2012; UNESCO, 2012:18; Thomas & Orthobert, 2011:58-59). These concerns support Wei and Leung's (1999:20) research, which confirms that classrooms are understood to be among the least acceptable places for using mobile phone technology. All these sentiments are largely the reason why school policies internationally and locally have in many instances adopted a zero-tolerance attitude towards it.

In the United States, where 87% of high school learners possess cell phones (Pew Research Internet Project, 2014), a 1997 regulation still applies today. It rules that "the possession or use of cellular telephones by students within school buildings is prohibited" (Pounds, 2010). While 69% of the schools have adhered to the ban (Johnson, 2010), others have relaxed it to a degree by allowing their high school learners to carry cell phones during the day on condition that they are not used or seen during class hours (Pounds, 2010). Some schools are prepared to allow the use of cell phone technology in classes provided that the teacher has asked permission in advance with an explanation of what will be done and why it is necessary (Watters, 2011; Johnson, 2010). In some cases where schools started to realise the value of cell phones as a teaching and learning tool they have lifted the ban by allowing teachers to

incorporate the use of the cell phone into their lessons (Higgins, 2013; Katz, 2013; Earl 2012; Nielsen & Webb, 2011:4, 6).

In the case of the United Kingdom, where over 90% of the teenagers are in possession of a mobile phone, there is still a “policy vacuum” regarding their use in schools (Beland & Murphy, 2015:3; Barkham & Moss, 2012), which has left the onus on individual schools to decide which practice is best for them. The debate on whether or not learners should take their phones to school gained new momentum as current research done by the Centre for Economic Performance at the London School of Economics and Political Science indicated an improvement of 6,4% in the test results of 16-year old learners at those schools that had banned mobile phones (Beland & Murphy, 2015:3). By 2012 some 98% of the schools were disallowing phones on their school premises or required them to be handed in at the start of each school day (Doward, 2015). A few other schools tolerate them on the school grounds provided they are switched off and put away (Clark, 2012). In some schools cell phones are permitted in classes at the teacher’s discretion, with punitive measures being taken when misused (Barkham & Moss, 2012).

Where policy in Canada once unilaterally dictated that cell phones should be switched off and put away during school hours, teachers at some schools are now permitted to use them in class at their discretion (Anon, 2013; Pennell, 2013; O’Toole, 2011). As far as Asia is concerned, clear national-level policies, plans and actions to promote cell phone use in classes are for the greater part still lacking. Consequently teachers are slow to embrace its technology as a teaching and learning tool (UNESCO, 2012:18, 21-22, 25-26).

Regardless of the diversity in their socio-economic status, a large number of secondary school learners in South Africa own cell phones (Brown & Czerniewicz, 2010:366; Kreutzer, 2009:54). In the Western Cape and Gauteng alone, approximately 84.8% and 88.4% of learners in secondary schools respectively own cell phones (Unisa, 2012a:6; Unisa 2012b:6). Presently no formal national policy on the use of cell phones in schools exists, but pressure is being applied by some school organisations such as the National Association of School Governing Bodies (NASGB) for a no-tolerance policy. Supported by the Department of Basic Education, the NASGB believes that banning cell phones will allow learners to focus on their work and will “protect them against irregularities on social networks” (Jones, 2012).

From the evidence it is clear that a great deal of controversy exists regarding the integration of cell phone technology into the teaching and learning environment of the school classroom. In spite of the conventional arguments offered and policies introduced to exclude cell phones from classrooms, some schools are of the opinion that the cell phone should and can be embraced as a pedagogical tool. This approach could be one of the reasons why teacher and learner support for the use of cell phone technology in the classroom is becoming more evident (Blanche *et al.*, 2014:18; Ozdamli & Uzunboylyu, 2014; Ahrenfelt, 2013:146-147; Averianova, 2012; Nielsen & Webb, 2011:6).

In the case of South Africa, where a national cell phone regulation for schools is still lacking and in instances where schools have not yet formulated their own policies, it leaves the door open for History teachers to embrace this device as a technological teaching and learning tool. Although more recently questioned by some scholars (for example Crook, 2012:63-80 and Selwyn, 2009:364-379), being called “digital natives” (Prensky, 2001), the “net generation” (Tapscott, 2009) or the “millennials” (Howe & Strauss, 2000) suggests that the (History) teachers of today (born after the 1980s) have grown up surrounded by digital technologies and are more comfortable, interested and willing to experiment with cell phone technology in class than their older counterparts. It is claimed that “digital natives” are learning differently in the sense that they respond much better to interactive and experiential learning opportunities than the traditional passive lecture style of content delivery (Tapscott, 2009:7-8; Oblinger & Oblinger, 2005:1.3-1.4; Prensky, 2001:1-6). This might serve as a reason why History teachers in some South African schools are ready to embrace cell phone technology as an extended teaching and learning tool.¹ However, Makoe (2013:593,599-600) is of the opinion that teachers in the rural communities are not convinced of the potential of cell phones for teaching and learning purposes as they have never seen them being used to that effect.

On the other hand cell phones have become an indispensable part of the lives of 21st century (History) learners with regard to the manner in which they experience their world (Pennell, 2013). They share in the digital age by skilfully applying the technology their cell phones offer to construct their own informal learning outside the walls of the classroom by accessing and

1 In informal discussions some History teachers from different types of secondary schools admitted to the authors that they have started to integrate cell phone technology as an extended teaching and learning tool in their classes on a small scale by using the internet function on their learners' smart phones, mainly to *google* for additional information on a specific topic. However, as far as the authors could establish, the Poll Everywhere application has not been applied in combination with SMS technology.

assembling information from a variety of sources (Oblinger & Oblinger, 2005:1.3). However, on returning to the formal learning environment, their favourite device is in most instances disregarded as a tool that can support their learning (Sharples, 2002:506). According to Ahrenfelt (2013:143), this situation has created a breach between the learners' "expectation about learning in their everyday lives and the reality of the classroom". The challenge for the History teacher therefore is to "develop designs" (Hasemi *et al.*, 2011:2479) in which connections between these two settings can be made. Tapscott (1998:131) believes the establishment of these connections are important for 21st century learners who "are forcing a change in the model of pedagogy, from a teacher-focused approach based on instruction to a student-focused model based on collaboration". He is supported by Prensky (2009:11), who claims that: "Our students have changed radically. Today's students are no longer the people our educational system was designed to teach". They "crave interactivity" (Prensky, 2009:4) where preference is given to a team and peer approach constructing their own knowledge rather than being told what to do (Oblinger & Oblinger, 2005:2.7, 2.11).

Problem statement and research aim

From the aforementioned it is clear that the negative perceptions about the integration of cell phone technology into school classrooms are dwindling. Most History teachers are of the opinion that the teaching and learning of the subject requires "going beyond the simple transmission of consensual narratives" (Britt *et al.*, 2000:437). History teachers abroad and in South Africa are to a great extent willing to embrace and integrate cell phone technology within their classes, while their learners are waiting patiently for an opportunity to link their informal and formal learning environment by using cell phone technology. Makoe (2013:601) stresses the importance of the integration of cell phone technology in the teaching and learning process when he postulates that it "is no longer a luxury, but a necessity in most under-resourced rural communities" in South Africa.

Except for studies abroad such as those of Nielsen and Webb (2011), Kolb (2011) and Haydn (2013), the potential of specifically integrating cell phone technology and ARS to support and enhance teaching and learning in the History classroom has not been extensively researched. In fact, the authors are not aware of the existence of any published studies in South Africa on

how cell phone technology in combination with ARS such as Poll Everywhere can be utilised to support the instruction of History in secondary schools. As a result of cell phones' rapid proliferation and popularity, it is imperative to explore ways in which their features and functionalities in combination with the Poll Everywhere application can be tailored for use in the History class.

The purpose of this article therefore is to explore and assess how the ARS Poll Everywhere (www.polleverywhere.com), which is based on the cell phone's SMS function, can be implemented in the design of a Grade 9 History lesson. An additional aim of this small scale pilot study is to assess learners' perceptions and attitudes as well the teacher's experiences after they have had a first-time opportunity to integrate cell phone technology and Poll Everywhere into their classroom lessons.

Literature review

Theoretical Framework

The Mobile learning (m-learning) paradigm

The term mobile learning (m-learning) characterises the use of mobile technologies in education (Gedik, Hanci-Karademirci, Kursun & Cagiltay, 2012:1149). M-learning can be broadly defined as learning facilitated by mobile devices and wireless technology at all times and at all places to facilitate, support, enhance and stretch the reach of the teaching, learning and assessment process (Hashemi, Azizinezhad, Najafi & Nesari, 2011:2478; Ozdamli, 2011:927). Suitable devices associated with m-learning include digital media players, Personal Digital Assistants (PDAs), mobile (cell) phones, laptops, smart phones and iPods (Taxler, 2005). For this study m-learning represents alternative learning processes and instructional strategies that can serve as an enrichment and extension of the teaching and learning undertaken within the traditional environment of the History classroom.

M-learning does not replace traditional learning (Hashemi *et al.*, 2011:2477), but has different pedagogical benefits when integrated as a teaching, learning and assessment tool. In the first place it allows learners to actively engage with the functions of mobile technology that allow for varying levels of interactivity and learner-centeredness (Ozdamli & Cavus, 2011:940-941). The learners learn by actively constructing and assimilating new ideas and concepts based on both their previous and current knowledge, rather than being passively

fed information by the teacher. By being involved in the learning process, the learners take greater responsibility for their own learning (Valk, Rashid & Elder, 2010:120).

Another benefit of mobile technology is that it supports interpersonal communication and interaction as well as collaboration between teacher and learner and among the learners themselves (Rau *et al.*, 2008:4). Given that social interaction is considered an essential ingredient for effective learning, mobile technologies enable collaborative learning environments “in which particular forms of interaction among people are expected to occur which would trigger learning mechanisms...” (Dillenbourg, 1999:5). For Panitz (1999), collaborative learning seeks to create an emotional environment that will support and encourage dialogue and increased interaction between participants (learners-learners and learners-teachers) in an effort to construct a shared learning experience.

M-learning likewise supports the blended learning model, as it combines traditional face-to-face classroom teaching and learning with mobile technology (Ozdamli & Cavus, 2011:941). Moskal, Dziuban and Hartman (2013:23) argue that learners who study in a blended learning environment are more successful than others as it increases the opportunity for teachers to design more effective teaching and learning environments. Blended learning offers the potential to improve the manner in which the teacher deals with content, social interaction, reflection, collaborative learning, higher order thinking and problem-solving skills, and more authentic assessment.

Assessment is a critical component of m-learning (Ozdamli & Cavus, 2011:940). In particular, it supports assessment techniques such as self-assessment and peer assessment (Ozdamli, 2011:929-930). In both cases, m-learning provides prompt continual feedback during the formative and summative assessment process when learners are given the opportunity to judge themselves on their weaknesses and shortcomings in the attainment of certain set goals or criteria (Ozdamli & Cavus, 2011:940; Noonan & Duncan, 2005:1,5). Constructive feedback allows learners to revisit their errors by not only reflecting on their own learning attempts but also monitoring and correcting them in the execution of future tasks. In the process they become self-regulating learners (Valk *et al.*, 2010:121,125; Ross, 2006:2,7; Tan, 2006:2-3; Brooks, 2002:15).

Learning theories

M-learning, if leveraged properly, has the capability to complement and add value to the social constructive, conversational and connectivism learning theories (Luvai, 2007:583; Motiwalla, 2007:583, 585; Siemens, 2005:3-10).

The social constructivism epistemology views learning as a social process where the truth “is not to be found inside the head of an individual person; it is born *between people* collectively searching for truth, in the process of their dialogic interaction” (Bakhtin, 1984:110). Social constructivism therefore places the emphasis on social interaction, collaboration and negotiation among learners within their learning community (Vygotsky & Cole 1978:57). It shares the view that the construction and appropriation of new knowledge is a joint enterprise where learners should be helped to construct knowledge that is meaningful to their own lives (Taylor, 2002:175).

In a social constructivist classroom all cognitive functions are believed to originate through a process of peer interaction that is mediated and structured by the teacher through discussions and effectively directed questions on specific concepts, problems or scenarios. With the aid of the teacher and peers who are more advanced, learners will be able to master concepts and ideas that would they otherwise find difficult to comprehend on their own (Ozer, 2004).

The conversation theory fits into the social constructivist’s framework as it proposes that learning and knowledge are gained in terms of conversations and interactions between different systems of knowledge. The conversation theory suggests that for learning to be successful, continual two-way conversations and interactions are required. This takes place between teachers and learners, among the learners themselves, between actions and reflections, as well as between learners and a mobile learning device (Pask, 1976). In this manner learners will come to a shared understanding of the world (Sharples, 2002:508).

For the purpose of this article, the cell phone’s SMS technology and the ARS Poll Everywhere application provide a shared conversational learning space for History learners in which knowledge can be created and shared for learning to become a process of “to know”. This implies that History learners in co-participation with their peers and teachers will establish new knowledge, understandings and internalised new concepts that they have built on their prior knowledge. In this manner conversation is not simply the exchange

of knowledge, but rather a process where the learners become informed about each other's "informings" (Sharples, Taylor & Vavoula, 2007:224). As a result the learner becomes an active maker of meanings from the experience gathered.

Developed by Siemens, connectivism is described as "a learning theory for the digital age" (2005:3). It takes the view that technology has changed the world and consequently the way in which 21st century learners are learning. Connectivism is often described as "network learning" (Ravenscroft, 2011:139), as it asserts that learning occurs through connections within networks to which learners are connecting and feeding information. For learning networks to be established, a connectivism instructional tool (such as the cell phone) can be used, which will enable users to make connections with each other in an effort to exchange knowledge and learn from one another. For a traditional classroom setting a learning network can, for example, be established by using an application such as Poll Everywhere as an interactive classroom system to which everyone can connect by SMS. This technology offers an opportunity for History teachers and learners to become exposed to multiple perspectives and opinions that will enhance additional enriching learning opportunities. They will be able to dialogue and think together across the network to share and find new information which will modify their beliefs for new learning to ensue (Kop & Hill, 2008:10).

The SMS and the ARS Poll Everywhere

The cell phone's Short Message Service (SMS) is a text feature that allows for brief messages to be sent and received (Broinowski, 2006:33). It is labelled the "killer application" of mobile phones for reason of its user-readiness, convenience and cost-effectiveness. At a global average price of 11 cents per message (Bradner, 2012) the SMS is one of the fastest growing types of information communication technologies (Geng, 2012:78). The SMS feature can also be utilised to add value to the teaching and learning process that occurs in the conventional History classroom. The teacher may find that it provides just the right kind of interaction and communication between teachers, learners and content to enhance the teaching and learning experience (Thomas & Orthobert, 2011:64-65).

Despite the potential advantages that SMS technology can offer when integrated with classroom instruction, there are also certain constraints. For example, learners may find it difficult to concentrate on the content presented by the teacher during class while at the same time they are expected to text a message (Markett *et al.*, 2006:290-291). Another concern is that learners may have no credit left on their pre-paid phones, which will leave them unable to send an SMS. The fact that cell phones have a small screen size and a restricted text input of 160 characters (which can impact negatively on the information richness of messages) is a further limitation to take recognisance of when considering it as a teaching and learning tool in the History class (Rau *et al.*, 2008:4; Broinowski, 2006:34; Markett *et al.*, 2006:283). However, Librero, Ramos, Ranga, Trinona and Lambert (2007:236) believe that the restricted volume of content that can be sent via SMS should not necessarily be perceived as a disadvantage. Learners will be forced to prioritise the information that they want to include in their messages, which may stimulate high-order thinking.

Poll Everywhere (<http://polleverywhere.com>) on the other hand is a free online web-based ARS based on the cell phone's texting technology for the purpose of collecting learner responses (Shon & Smith, 2011:238-239). This system will enable the History teacher to receive immediate feedback after learners have had a chance to text their comments or votes to interactive, live polls. Learner responses are transmitted to a predetermined phone number that the polleverywhere.com website provides. On receiving the responses, they are automatically summarised and instantaneously displayed on the teacher's polleverywhere.com website. These response results are represented by means of graphs and tables which continually update as more learners text in their replies. History teachers should display the information on projector screens so that learners can view the results as they come in. When the poll is finally closed the results can, for example, serve as an interactive platform to stimulate class discussion and debate (Maguth, 2013:89). For more information on how to create a poll, see the user guide at: <http://www.polleverywhere.com/guide>.

The Poll Everywhere application offers many advantages when applied as an educational tool. It is simple to use, and except for the standard text messaging rates to submit a vote or a comment, it is still very affordable. Also, learners are not expected to have smart phones, tablets or laptops with internet access. The low-tech cell phone with its texting application will serve as an appropriate

mobile device. This makes Poll Everywhere especially suitable for the South African context where significant disparities still exist between rich and poor.

Poll Everywhere's polls provide for the option of two types of poll questions that can be deployed in the classroom: multiple choice questions or open-ended questions, the latter allowing the learners to respond in their own words. A further advantage is that the votes/comments can also be embedded in the teacher's own PowerPoint. As learners submit their responses, these will automatically feed onto the PowerPoint slide (Maguth, 2013:90; Shon & Smith, 2011:238-239).

All submissions made through text messaging to Poll Everywhere are anonymous. This is useful for learners who are introverts or shy and may not feel comfortable to make any contributions in the History class for fear of pressure or scrutiny from their peers. Anonymity of learners will promote active participation that will in turn enhance interaction and collaboration (Keengwe & Bhargava, 2013:740-741). This assumption was confirmed where Poll Everywhere was integrated into the teaching and learning of students at a university. Results of this study showed that more responses were received through text messaging than was the case when the students were asked to raise their hands (Radnofsky, 2007). Research further shows that ARS not only enhanced increased classroom engagement, but could also improve academic results (Dufresne, Gerace, Leonard, Mestre & Wenk, 2003:3). In this regard Walsh (2006) makes the point that much depends on the skill with which voting technology is used, in other words, on the quality and nature of the questions posed. For example, in instances where only simplistic yes/no answers or multiple choice tasks are expected, it will not necessarily lead to improved learning results.

A final huge advantage of Poll Everywhere is that it offers a quick, free plan sign-up package that asks for the usual information (name, e-mail address and password), that will allow the teacher to utilise the free functions as explained in these sections (See: <http://polleverywhere.com>). The free subscription plan is limited in so far as that it allows for a maximum of 40 responses to be recorded per poll (Fischer, 2014:413). This feature together with the standard texting cost when sending an SMS can be considered to be possible limitations of Poll Everywhere when utilised as a teaching and learning tool in the History class.

A History lesson integrating cell phone technology and Poll Everywhere

The aim of this article is in the first place to explore how SMS technology and the ARS Poll Everywhere application can be integrated into the design of a Grade 9 History lesson.

The topic that will serve for this lesson is the Second World War. In previous periods, the Grade 9 learners were already given a broad overview on this topic. The content therefore was not completely new when the cell phone and Poll Everywhere were incorporated as resources in the subsequent lesson. The lesson was planned and designed in accordance with the requirements of the Curriculum and Assessment Policy Statement (CAPS) for Social Sciences, Grades 7-9 (DBE, 2011) and will comprise two periods of 45 minutes each.

Initially, when endeavouring to integrate technology into the History classroom, the formulation of clear lesson objectives is essential. After the lesson, learners should be able to:

- Identify the major countries and leaders that took part in World War II.
- Explain the causes of World War II.
- Define the concept “propaganda” and describe how it was used by the Nazis.

As an introduction to the lesson the teacher beforehand sets up a multiple choice question via Poll Everywhere, which is then shown on the projector screen. Learners walk into the class and while settling down, read the question and then respond via text messaging to the given numbers on the screen. In instances where learners are not in possession of a cell phone, it can be shared with their peers.

The multiple choice question posed by the teacher could be to identify the country that was not part of the Allied Powers during World War II. The following answer options can be given: A. Britain, B. Italy, C. France, D. Soviet Union. After everyone has had a chance to respond, the teacher closes the poll and then displays the chart generated by the system, showing the responses to the question. The results should preferably not be shown while voting is still in progress as learners may assume that the popular answer is the correct one. This might persuade them to follow the majority vote.

The poll results will not only indicate how many learners selected each answer choice, but also how many correctly chose B as the answer. The teacher can use these responses as a stimulus for follow-up questions, for example to identify the leaders of the countries at the time of the war, as mentioned in

A-D. Another option would be to ask learners to name the other Great Power that formed part of the Allied Forces (and when and why this country joined at a later stage), or to name all the countries and their leaders who joined Italy to form the Axis Powers. All the answers to these questions are immediately imbedded in the PowerPoint presentation and learners can see the feedback of their peers. It is important for the teacher to spend at least some time on each of the answer choices given, whether right or wrong. Learners would on the whole like to hear their teacher's viewpoint on their answer choices even if they know those choices were incorrect (Bruff, 2009).

All the questions asked at the start of the lesson will activate prior knowledge and enable each individual learner to by means of self-assessment determine how much he/she knows. For the teacher this baseline assessment holds great value as it provides a good indication of the amount of knowledge the learners already have. This is imperative as the teacher will then know whether or not to slow down the pace, repeat work or leave out information because the learners have already grasped it.

As the teacher moves on to the next phase of the lesson, a short video clip, for example on the causes of World War II, can be shown. Learners will now have some background to the countries that were responsible for the outbreak of the war and by watching the video their knowledge about what caused the war will increase. After the video the teacher can draw a mind map on the chalkboard illustrating the most important causes of the war. These are listed in a multiple choice question: A. The Treaty of Versailles, B. Hitler's foreign policy, C. The failure of the League of Nations, D. Policy of appeasement and E. The Nazi-Soviet Pact. Learners must text their opinions about which factor they consider to be a short-term/immediate cause of the war to Poll Everywhere. If option A for instance received the most votes, the teacher can now ask the learners to respond to the following open-ended question: "Why do most of you consider option A (The Treaty of Versailles) to be a short-term cause of World War II?" (Those learners who did not initially choose A as their answer are also obliged to motivate why they do not consider A to be the correct answer). Using the SMS function, the learners will be able to summarise their understanding of this open-ended question in a limited number of characters. In the end they will see each and everyone's reply on the screen (even those who were in disagreement) after the responses have been submitted.

Subsequently the learners can be divided into small groups according to their responses. This can serve as a platform from where the teacher can facilitate an interactive debate-based class discussion to create an opportunity for the learners to think intentionally about the content in support of their viewpoints. In this manner the cell phone's SMS application and the Poll Everywhere application provide an important interactive and interconnected classroom environment (as proposed by the learning theory of connectivism) for learners to engage in critical high-order thinking by reflecting, assessing and reacting to the different opinions of their peers. At the same time learning becomes more integrated and collaborative as suggested by the constructive and conversational learning theories. Furthermore, the open-ended question asked also creates a powerful mechanism for formative assessment. The interactive debate-based class discussion that follows the learners' responses not only provides the teacher with continual and useful feedback on the learners' learning, but also assists the learners to demonstrate and monitor their own understanding of the topic through self- and peer assessment. By responding via their cell phones to Poll Everywhere a classroom environment is thus created that fosters and supports learning and assessment. All the learners are actively engaged by sharing their opinions instead of a few raising their hands and then being requested to respond individually.

In addressing the lesson objective of defining the concept of propaganda, learners can be given the chance to participate in a class brainstorming poll by sending their responses and ideas on what they think propaganda entails to Poll Everywhere. With the aid of the learners the teacher can then use these responses to compile a definition of propaganda. Through this inductive discovery the learners are not simply the passive recipients of knowledge, but are actively and collaboratively involved in the construction of their own new knowledge. Now that the learners know what the concept of propaganda entails, Hitler's book *Mein Kampf* can be utilised as the primary source. The learners are asked to study the following excerpt from this source within their groups and then list the methods that Hitler considered important for the employment of propaganda:

The truth must always be adjusted to fit the need...Propaganda must not investigate the truth objectively and, in so far as it is favourable to the other side, present it according to the theoretical rules of justice; yet it must present only that aspect of the truth which is favourable to its own side... The receptive powers of the masses are very restricted, and their understanding is feeble...All effective propaganda must be confined to a few bare essentials and those must be expressed as far as possible in stereotyped formulas. These slogans should be persistently repeated until the very

last individual has come to grasp the idea that has been put forward... (cited in Combs & Nimmo, 1993:69).

The teacher can use the feedback from the groups to facilitate a class discussion, after which further sources (e.g. posters, speeches, photo's, poems, etc.) can be distributed among the groups in an effort to assess how Hitler's propaganda campaign (with the above considerations in mind) manifested in the fields of art, culture, leisure, education, etc.

In concluding the lesson, Poll Everywhere can again be utilised as a post-assessment quizzing tool. The teacher creates a poll that consists of a few questions with multiple choice answers about the work that was done in class. In this way the cell phone's SMS technology and Poll Everywhere serve as important tools for summative assessment as the teacher will through instant feedback be able to establish if the learners have reached the set lesson objectives.

Research methods

Procedure and sampling

An additional aim of this article is to assess by means of a small scale pilot study the learners' perceptions and attitudes as well the teacher's experiences after they have had a first time opportunity to integrate SMS technology with the Poll Everywhere application into their lessons.

A small scale survey was conducted using a questionnaire. The data were collected by means of a non-probability (purposive) sampling (Cohen, Manion & Morrison, 2011:155) drawn from Grade 9 learners (n=52) in a private/independent and a public (former Model C) school situated in Gauteng.

One of the authors of this article presented the same lesson (a shorter version of the one above so as to provide for a period of 45 minutes) to each of the Grade 9 classes in the two different schools. At the end of the lesson the learners were asked to voluntarily complete a short semi-structured questionnaire so as to empirically determine their perceptions of and attitudes toward the utilisation of cell phone technology and the Poll Everywhere application in their instruction.

By means of a descriptive analysis, data were organised and summarised to promote an understanding of the data characteristics (Pietersen & Maree, 2007:184).

For this research, permission was obtained from the principals and subject teachers. For reason of confidentiality, the names of schools, teachers and learners partaking in this pilot research were not mentioned.

Presenting the two lessons by integrating cell phone technology and the Poll Everywhere application enabled the History teacher (as one of the authors of this article) to personally reflect on the *in situ* events as they unfolded. This mode of research ensures more authentic data as it involves the researcher's personal experience (Cohen *et al.*, 2011:456).

Research findings and discussion

The results of the research initially showed that the overwhelming majority of participants (96%) had positive perception levels about the use of cell phone technology when used in combination with the ARS Poll Everywhere. They found it “quicker” (than writing), “interesting” and “fun”, which “make(s) the class more enjoyable”. These positive perceptions support the research findings of Ting (2013:6,12) and Prensky (2001:3) that learners will become more excited about the teaching and learning process when their teachers incorporate new technologies, and are also in accordance with the results of Seilhamer, Chen and Suger (2013:390) that showed that university students found the implementation of mobile tools to be “beneficial and fun” and overall very satisfying.

The findings of this pilot study furthermore showed that the participants believed that the SMS application and Poll Everywhere expanded their knowledge of the Second World War, and provided a good alternative to textbooks. With the exception of one participant, the participants (98.0%) also indicated an eagerness to use cell phone technology in other subjects, especially in Maths (for the calculator), and where internet access is available, for English and Afrikaans to utilise the *google translate* function and to check spelling. These beliefs and opinions correspond with the research findings of Moura and Carvalho (2013), in that the learners in their study believed the integration of mobile phones as a complementary learning tool added value to their classroom instruction, and should therefore not be banned.

The participants in this study were also of the opinion that the cell phone's added technologies such as the camera, dictionary, calculator, *google*, voice recorder, video and notepad should be considered as further applications for classroom instruction. These positive attitudes correspond with the

contemporary and extensive research by Ozdamli and Uzunboylyu (2014) in Northern Cyprus schools. The participants in their study, aged between 12 and 18 years, clearly indicated their willingness to use mobile learning technology applications in their classes.

When the participants in this study were asked about possible disadvantages when using the cell phone as a teaching and learning tool in class, the majority (67.3%) singled out the financial aspect of “data charges” (air time) as the biggest hindrance. The second biggest disadvantage singled out by more than half of the participants (53.8%) was that of the cell phone being a “distraction”, for example “when their peers are taking ‘selfies’ (a photo of oneself) or “pictures or videos of the teacher”. They were furthermore concerned that their classmates might “visit other sites”, “playing games” or would be involved in “social networking” or use their phone to “cheat”. Other considerations were “the battery life” (38.4%) which could result in the loss of data, and the risk that their phones could “get stolen” (11.5%).

The teacher presenting these two lessons at the two different schools had positive as well as negative experiences when integrating cell phone technology and Poll Everywhere into the classes.

On the negative side the teacher experienced technical problems when presenting the lesson in the public school, where 35 Grade 9 History learners participated in the lesson. This large number of learners sometimes caused a lack of signal coverage or an overcrowded network, which impacted negatively on the natural flow of the lesson as a number of learners were initially not able to send their SMSs to the predetermined phone number that the polleverywhere.com website provided. The teacher then had to wait for a longer period of time for these learners to transmit their answers to show on the screen before continuing with the lesson.

On the positive side, this problem did not occur in the private school where only 17 learners participated in the History lesson. The network was easily accessible at all times and no problem was experienced with signal coverage. This not only made the application Poll Everywhere simpler, but also contributed to more flow in the lesson which transitioned well from phase to phase.

Although there were glitches in the presentation of the lesson in the public school, the learners’ responses to the Poll Everywhere application and the use of their cell phones’ texting option was similar to those of the private

school learners. In both History classes the teacher experienced a positive and eager disposition on the side of the learners about the integration of these technologies into their History lesson. Their positive attitude and response to the potential of these technologies have inspired the teacher to gladly integrate cell phone technology and Poll Everywhere in her future History lessons.

Conclusion

This article explored how the cell phone's SMS technology and the ARS Poll Everywhere application can be integrated as teaching and learning tools in a History classroom. Although it is not possible to draw any generalised conclusions from a small scale pilot study of this nature, the authors hope that this contribution will encourage research on a bigger scale that could involve larger sample sizes of History learners from all types of schools, including those that are historically disadvantaged and underprivileged. Future research will also need to be undertaken to learn more about how the integration of cell phone technology and Audience Response Systems impacts on History learners' learning as well as their History teacher's classroom instruction.

However, it is important to acknowledge that the integration of cell phone and Poll Everywhere technology should not be seen as the be-all and end-all. By itself technology cannot enhance pedagogy (Ozdamli & Uzunboyly, 2104). It is not meant to replace face-to-face debate and interaction in the classroom. The integration of cell phone and Poll Everywhere technology as teaching and learning tools has in the first place to be educationally meaningful in the sense that it endorses the attainment and expansion of the set learning goals. It should be considered and applied as additional tools to the traditional teaching and learning that occur in the classroom, and not just as an entertainment add-on. The point is not to "teach with technology" but to integrate technology to convey and assess content more powerfully and efficiently in an effort to reach the set outcomes (Rosen, 2011:10-15).

For this reason education stakeholders should consider reviewing their policies banning the use of the cell phone in classrooms. With well-defined school policies in place (e.g. having the cell phone on silent mode at all times, and only allowed to be handled once the teacher instructs the learners to do so), History teachers can be encouraged to utilise it as an instructional tool. Regardless of learners' socio-economic status, mobile phones have become an indispensable part of the lives of all History learners, and for this reason they

should be allowed to use it as a tool in support of their learning. By prohibiting cell phones and Poll Everywhere technology from the History classroom, its ability to serve as a 21st century teaching and learning tool is marginalised. History learners will consequently be deprived of the opportunity to develop the skills they will need to succeed in a world driven by new technologies.

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