eTeachers and their impact on learning and teaching

Dr Ruth Geer
University of South Australia, Australia, ruth.geer@unisa.edu.au

Abstract: Today’s students live and thrive in a digital environment. Current technologies are shaping their expectations and the ways in which they wish to learn. Teachers frequently lack confidence and competence in integrating online resources as part of the classroom experiences. Thus resources, guidance and strategies are needed that can assist teachers to engage with contemporary learning environments. This paper discusses an initiative implemented by an education department to address such issues. The study examines the effectiveness of an eTeacher project to develop quality online resources that can be utilized by teachers to enrich the learning experiences of students. A variety of data resources are used to examine the impact of the project on teacher engagement with online resources, and its sustainability as a strategy that may lead to increased student motivation and ultimately higher achievements.

Keywords: Inquiry learning, Web 2 resources, tools for learning, personalized learning

1. Introduction

Twenty-first century education offers opportunities for creating new learning and teaching possibilities and engaging students in ways not previously possible. Today’s students are increasingly living and thriving in the digital world (MCEETYA, 2005) resulting in differences in the way teachers and students think about learning. Over the last decade there has been an escalation in new technologies which have opened up diverse and exciting ways of learning. There has been the growth of Web 2.0 technologies, the rapid appearance of interactive whiteboards in classrooms, the use of wireless technologies, augmented reality and many others. Technologies are emerging and changing too rapidly for teachers to keep up with the developments and to explore ways in which they might be used to support learning. On the other hand, Prensky (2007) also suggests that “many teachers are highly fearful of the technologies that the students take for
granted” (p40) and therefore struggle with strategies of integration and prefer not to even think about these social web technologies.

Although some students may suggest that teachers should not even try to keep up because they will never be competent users, there is considerable discussion amongst educators as to whether students actually want their teachers using many of these personalized technologies. Students often see the social technologies as belonging to another part of their life. However, there are many technologies that when used appropriately and in productive ways can enhance the learning of students. Technology has placed learning in the hands of the students by offering them tools that can give them access to information while being able to readily share and publish their ideas. This allows them to learn in diverse and exciting ways. Over the years significant changes have occurred in the way that technologies are being used for learning to assist students to become confident and creative users of the technologies. The students’ approaches to learning are influenced by their ability to access a wide range of resources and services 24 hours a day and 7 days a week. It is also recognized that further benefits can be gained from the sharing of ideas that utilize the communication technologies.

As the emphasis shifts towards preparing students as global citizens, students must be given the opportunity to develop the “capabilities, dispositions and literacies required to participate in society and to deal with the complexities of issues and change” (MCEETYA, 2005, p5). This paper explores the potential for increased engagement with online resources through the implementation of the eTeacher project aimed at providing teachers with ready access to rich online resources that could benefit and enhance the learning and capabilities of students. The online resources also provided students with opportunities “to learn in meaningful and authentic ways where they could take responsibility for their own learning through further investigation and in some cases continued interactions” (Department of Education and Children’s Services (DECS) Strategic Plan Objective 6, 2006).

2. Research Rationale

A number of research studies indicate that teacher confidence is a major factor in determining teacher and student engagement with information and communication technologies (ICT) (BECTA, 2003). The use of ICT frequently brings additional stress to novice users. However by ensuring effective professional learning staff can feel valued, gain confidence and thus become willing to take risks. Teachers also learn in different ways and therefore by providing flexibility around the support available this may help to address their own preferences for learning (Condie & Munro, 2007). Well designed professional development training in the use of ICT is essential to meet the needs of today’s teachers who, in most cases, want to learn how to use ICT effectively in their teaching.
In a report *Embedding ICT in schools*, Ofsted (2005) warns that confidence and competence with the technologies is more than just using the applications themselves, rather its impact on learning, that comes from effective integration into teaching and learning, is more critical. “Where ICT has become a regular part of the classroom experience, there is evidence of positive impact on learning and student performance” (Condie & Munro, 2007, p23). Staff development beyond managing the technology is needed to provide guidance and advice on implementing ICT into everyday practices (Condie et.al, 2005). Teachers need visions on how to utilize the potential of such tools to further enhance the learning of their students. It is only when such opportunities are given to staff can they be informed and confident in their use of technologies (Bowes, 2003).

A further factor influencing the use of ICT in the classroom is the way in which computers are deployed within the school and classroom. Although there continues to be debates around whether computers should be in computer suites or in the classroom, wireless technology and classroom-based computers have been shown to offer an increased opportunity for personalized learning and to cater for individual interests and diverse learning needs. Regular access to the technologies, as well as ensuring support when things go wrong in the classroom, lead to a greater sense of control and well-being.

Teachers’ pedagogies have also been shown to affect students’ achievements and are influenced by such factors as the type of technologies chosen, the ways they are utilized and the extent to which teachers plan and prepare for the integration (Cox, Abbott et al. 2003). It is important that ICT use is directly linked to curriculum outcomes and that they are a common aspect of the classroom experience. Although, frequently cited findings suggest that the use of ICT leads to increased motivation and improved engagement, this increased motivation does not necessarily lead to higher achievement. Rather, achievement outcomes must be linked to such variables as “the development of learner autonomy and higher order cognitive skills” (Davies, Hayward et al. 2005).

### 3. The project

The aim of the eTeacher project was to create rich online learning resources that would provide teachers and students with a collection of quality resources and that would meet the learning objectives of the state curriculum framework. A further objective of the project was that such resources would be accessed by over 40% of DECS teachers and students over the period of three years. It was also hoped that such a project would increase teacher confidence and competence with ICT where support would be given by the eTeachers as well as ICT coaches. Teachers were to receive professional development on how to use the online resources that utilized a variety of technologies including the use of Moodle, video conferencing through Centra, blogs, discussion groups, digital cameras and other technologies.
Early in 2006 teachers were invited to apply for an eTeacher position. At least one teacher from each of the 18 school districts was to be appointed with some additional eTeachers being appointed who would have a particular focus on preschool or secondary education. eTeachers were required to produce and implement a major event (online resource) each term. In order to support this eTeachers were released for one day per week and were to receive 10 days of professional development over the three year period of the project. In addition, eTeachers were provided with a laptop to give them flexibility and ready access to the resources required in the development and subsequent promotion of such events. The term, ‘event’ was used to describe high quality online resources that utilized a variety of technologies and that would address curriculum learning area frameworks. All eTeachers were classroom teachers, as it was considered important that they were familiar with classroom expectations and were an integral part of the school community.

eTeachers were given freedom in the type of events they developed. Initially many of the events looked at activities that were of interest to them and their class while also exploring local resources. For example, one of the eTeachers lived in a farming community and thus developed an event on sheep shearing. Students had opportunity to talk to actual shearers about how sheep were shorn and how the wool was graded. Another event was on the skill of filleting fish as the eTeacher lived near the ocean and could thus engage professional fishermen to talk about their work and engage in conversations with students. Other events were also developed on topics with which eTeachers were familiar or they knew they would be teaching later in the year. There was an event entitled “Your friend the potato” which was designed and developed for the International Year of the Potato. Other events explored such topics as Antarctica, the zookeeper, women in maths and science, backyard bugs and behind the bushfires. Classroom teachers were thus given a wide range of topics from which to choose. As many of the events incorporated synchronous components, timetabling particularly for secondary teachers was a problem. Also, there was frequently short timelines in publicizing the events which impacted on their uptake, as teachers had already planned their units of study for the term.

4. Methodology

It was decided to evaluate the success of the project after 2 years rather than at the end of the 3 year period to ascertain its success to date, so that if changes needed to be made they could be implemented as soon as possible to improve its impact. A further purpose was to ascertain the sustainability of the project for its possible continuation. A number of data collection methods were used to gauge the effectiveness of the project in providing rich online resources that could support teachers while also enhancing student learning. Information relevant to the project
was collected from DECS which included details about teacher and school participation rates in the events and the types of events being developed by the eTeachers. Online surveys, completed by 17 from a total of 21 eTeachers and 61 classroom teachers who had participated in the events were examined. Also information was recorded and analysed from a number of eTeacher focus groups: and from phone interviews with five principals of eTeachers, three District Directors and five participating teachers. Unfortunately no secondary teachers responded to the online survey which also was reflected the low participation of secondary schools in the events. The following table outlines the number of events produced each term over the first 2 years of the project and the number of registered teachers participating in the events. The 21 eTeachers were expected to create an event each term and it was hoped that many classroom teachers would have their class participate in the events.

Table 1. Number of events and participating teachers per term

<table>
<thead>
<tr>
<th>Timing</th>
<th>No. of events</th>
<th>No. of participating teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term 2, 2006</td>
<td>9</td>
<td>38</td>
</tr>
<tr>
<td>Term 3, 2006</td>
<td>19</td>
<td>82</td>
</tr>
<tr>
<td>Term 4, 2006</td>
<td>23</td>
<td>144</td>
</tr>
<tr>
<td>Term 1, 2007</td>
<td>17</td>
<td>59</td>
</tr>
<tr>
<td>Term 2, 2007</td>
<td>14</td>
<td>135</td>
</tr>
<tr>
<td>Term 3, 2007</td>
<td>23</td>
<td>167</td>
</tr>
<tr>
<td>Term 4, 2007</td>
<td>19</td>
<td>37</td>
</tr>
<tr>
<td>Term 1, 2008</td>
<td>26</td>
<td>97</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>150</strong></td>
<td><strong>759</strong></td>
</tr>
</tbody>
</table>

5. Discussion of some of the results

As it is impossible to discuss in depth all the findings of the project in this paper, only some of the key findings will be highlighted. As Table 1 shows the uptake by teachers over the first two years of the project was not as high as hoped with the 759 teachers participating in the events representing only 6.5 % of all DECS teachers. Some of these teachers had participated in more than one event making the percentage even lower. It had been hoped to achieve 40%. There were found to be a number of reasons for this. Comments from eTeachers during the focus groups indicated that publicity was a problem as many teachers were still unaware that such events existed, particularly those who had not participated in ICT professional development training courses. Teachers’ lack of knowledge about the tools being used also explained why many teachers were not participating in the events. Although flyers and emails were sent out to the schools they were not
necessarily being seen by many of the teachers. On the other hand, the general response from participating teachers in the online survey indicated that communication about the events was satisfactory, but it was other factors such as registration in the events, timetabling issues or access to computers and technical support that were deterrents. The following statements highlight some of the issues they experienced:

“Communication is fine, facilitation, timetable balancing, competing demands and infrastructure developments are the issues. Teacher knowledge of how to make the event work for them and their learners is a an issue too”,

“Communication is fine. It is the logistics of enrolling, relevance of topics, and access/use/ability to use the technology that has been problematic.”

Registering for the event was not as straight forward as it might have been and needed to be streamlined. Approximately 25% of the teachers indicated that they would have liked more details such as, instructions about the event, including the length of time of the event and the technologies that they would be using. An equal number also wanted more training or re-training on the use of the technologies as well as guaranteed technical support to ensure that the technologies would run effectively in their school environment.

Many of the events were both synchronous and asynchronous to encourage greater interaction between students and experts from the community as well as to allow continued engagement and sharing of ideas and further research after the event. Although it was felt that synchronous events did increase engagement by the students, timetabling and a tight curriculum allowing little flexibility proved a stumbling block particularly for secondary teachers. When asked about the characteristics that most attracted teachers to the events, of the 45 teachers who responded to that question, 31% of teachers indicated that they chose topics that tied in with the curriculum, met student needs, or, that students would be interested in. Other characteristics considered to be important were the ability to share information with other students and the opportunity to access information that would not be readily available to students through general classroom teaching. They also wanted students to have unique experiences that normally would be outside their range of experiences.

Although there was no direct evidence of enhanced student learning, teachers were in general positive about its impact. Teachers indicated that students wanted to continue researching event topics which suggested that students were interested and therefore wanted to pursue their own learning. “Kids still talk about their interaction with Lloyd re his underwater experiment.” Students were keen to continue interacting with other students who participated in the event. Parents occasionally spoke to the teacher about the impact that the event had had on their child which provided further evidence of student engagement. Students in particular seemed to enjoy being able to ask questions of “the expert” as well as listen to the questions asked by other classes. Based on the online surveys the following figures illustrate the opinions of participating teachers on the impact that they felt the events had on their students’ learning. Teachers were generally
positive about the enthusiasm that the events generated for the students and there was agreement that participation in the events helped students to learn.

Figure 1: Teachers attitude to student engagement with the event: ranging from Strongly Disagree (1) to Strongly Agree

Based on data from the interviews, teachers considered interactivity as a key factor in gaining and maintaining student interest and enthusiasm. The synchronous interactivity was considered a catalyst for engaging students in the topic by providing opportunity to interact with “experts” and other students. Asynchronous interactivity allowed students to continue their engagement over an extended period of time.

The following aspects were identified by eTeachers as critical to student engagement:

- The “WOW” factor
- Interactivity, whether synchronous or asynchronous.
- Students must have an opportunity to ask questions whether at the time of the event or later
- Topics must have particular appeal to students
- Inclusion of audio and visual mediums are desirable
- Teachers must demonstrate enthusiasm for the events.

Figure 2 outlines the impact that teachers felt the events had on students’ learning evidenced by their continued research and discussion of the event after it had occurred.
The following table provides further evidence of teachers’ positive attitudes towards the events and its impact on student learning.

Table 2: Impact of event on student learning ranging from Strongly Disagree (1) to Strongly Agree (5)

<table>
<thead>
<tr>
<th>Statement</th>
<th>No. Responses</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>The event seemed to have a lasting impact on students</td>
<td>55</td>
<td>3.47</td>
<td>1.05</td>
</tr>
<tr>
<td>The event helped students improve their learning of concepts and new ideas</td>
<td>55</td>
<td>3.65</td>
<td>0.89</td>
</tr>
<tr>
<td>The event catered for students with different learning styles</td>
<td>55</td>
<td>3.64</td>
<td>0.89</td>
</tr>
<tr>
<td>Students developed higher order thinking skills due to the event</td>
<td>56</td>
<td>3.32</td>
<td>0.91</td>
</tr>
<tr>
<td>I felt students engaged enthusiastically in the event</td>
<td>56</td>
<td>3.73</td>
<td>1.07</td>
</tr>
<tr>
<td>I felt the event helped students learn</td>
<td>54</td>
<td>3.87</td>
<td>0.91</td>
</tr>
</tbody>
</table>

There was some recognition that the events developed higher order thinking, however this may be more evident if teachers had been given additional time to prepare and work with the students. Teachers perceived the online events as catering for individual differences in learning styles (p<.001, N=55) which alluded to high levels of pedagogical expertise in the original design of these events by the eTeachers. While the information in the figures and table illustrate...
the views of teachers only unfortunately there was no opportunity to interview students about the effect that they felt participation in the events had on them. Further research is needed to explore students’ views and their general achievements from participation in these online events.

The eTeachers have been very positive about the potential of the project despite initially having difficulties around expectations of what an event might entail. They have been enthusiastic about the improvements in the quality of their events as they have gained more confidence and competence with the technologies. The dedicated training workshops not only provided them with the technical skills required but also the time to share ideas, discuss difficulties and work collaboratively to find solutions and develop excellent resources together. The provision of the laptop was considered an essential tool for eTeachers as it enabled them to go into any school and know that they had the programs that they needed for either running professional development workshops or for the preparation of their events.

Overall, eTeachers expressed their satisfaction with the support they received from Principals. In general, Principals were very positive about having an eTeacher on staff as teachers benefited from the additional support, influence and enthusiasm of the eTeacher and the increased demand for more ICT professional development. However the school infrastructure was not always adequate to ensure that the events could be accessed by all and thus be successful. Support from the District varied, sometimes due to changes in the leadership and the distance of eTeachers from the District Office. In general eTeachers felt well supported emotionally, professionally and technically.

6. Outcomes and conclusion

The evaluation of the eTeacher Project to date suggests that it has been successful in creating rich online resources which support the curriculum framework and provide teachers with resources that can enhance student learning. There is now a digital bank of resources that can be readily accessed by teachers for future use. It also provides examples and models of the type of resources that can be created. Although the uptake by teachers and schools has not been as high as hoped improved publicity strategies, and more information about the events with sufficient notice for teachers to be able to incorporate these events into their teaching plans, would expand the utilization and impact of these online learning resources. Teachers should also be given more time or at least encouraged to take time to familiarize themselves with the events so that they can ensure the greatest benefit for their students from event participation.

With only a small proportion of secondary schools participating in the events it may be necessary to increase the number of secondary eTeachers who can focus on developing events within their specific learning areas. Implementing a rotation
of learning areas as part of the appointment process of secondary teachers may ensure all learning areas are covered. Limited engagement by teachers and students in secondary schools related to the type of events being developed, the constraints posed by school timetables and the small number of events that targeted specific learning areas.

Overall, the project has been successful and created more online resources that have been pedagogically designed to support the learning process. It would appear that the current funding model is sustainable for pre-school and primary teachers with some adaptations needed for secondary eTeachers. Secondary teachers could perhaps be released from a line of teaching rather than one day per day which would align better with the secondary context. In addition, more teachers could be encouraged to participate by having eTeachers appointed for two rather than three years with their second year in a mentoring role to a newly appointed eTeacher who should be selected from other schools in the District thus expanding dissemination and direct benefits from having an eTeacher on staff. As more and more teachers are exposed to these events it is hoped that teachers will be encouraged to work together to develop some of their own online resources thus improving their own competence with the technologies and their ability to effectively integrate technologies into student learning.

This project has highlighted the importance of clear and advanced communication and the need for sufficient information and instructions about the events and for continual professional development. It was also hoped that through participation in events teachers’ ICT skills and confidence would be improved and this has been evident with those teachers who did participate in the events. However, the data suggests that teachers will only implement the integration of online resources if they are confident, competent and well supported technologically in their schools. Classroom teachers do recognize the value of rich online resources and its potential to increase engagement with possible improved learning outcomes. An evaluation of the project has recommended that with further refinement and a number of changes in various areas, that it does have the potential to increase the integration of online resources into the curriculum and to enrich the learning experiences of students.

References


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