EXPLORING ANIMATION: PROFESSIONAL LEARNING FOR TEACHERS

Chris Reading
SiMERR National Centre, University of New England, Armidale, Australia

Abstract

As new technologies offer an ever-increasing range of possibilities for supporting student learning, teachers struggle to keep abreast of the changes. This is especially the case for teachers in smaller rural schools who are isolated professionally from their colleagues. A group of teachers from four such schools in northern New South Wales combined to support each other in learning about animation and incorporating these new-found skills into their teaching. Associated research investigated changing teacher attitudes to ICT in learning as the teachers engaged in the professional learning. Questionnaire responses before and after the professional learning and journal entries made during the learning were analysed. This paper reports the results from the analysis. Questionnaire analysis indicated some changes in teacher attitudes about student use of ICT. Teachers believed more strongly after the experience that students should use ICT to support learning. Journal entries were used for detailed investigation of the nature of these attitudes to student use of ICT. Observations by teachers on the experience focused on what they had observed about their students’ learning.

Introduction

Animated movies, such as Madagascar and Happy Feet, and games such as, Quest and Mist, have raised the profile of animation as an artform. While animated environments help to make learning enjoyable, the animation process itself offers more to students including a new genre for expressing ideas and newly created knowledge. To increase the chances of school students being offered the opportunity to animate their learning, teachers need professional learning opportunities that provide them with the necessary technical and pedagogical skills to incorporate animation into their learning programs and that have a positive impact on the teachers’ attitudes to ICT in learning. This paper reports on a project that aimed to provide professional learning to facilitate the improvement of teachers’ attitudes to the use of ICT in learning.

Background

There would be few arguments raised against the premise that animations are popular. Educators have been encouraged to take advantage of the benefits of animation (Lowe, 2001) but concerns have been raised about whether such benefits exist. What learners notice and connect can be greatly influenced by the perceptual characteristics of animations (Lowe, 2005), so care should be taken that animations place sufficient emphasis on cognition. One consistently-claimed benefit of using animations in the learning process is student engagement, see for example Bassham (2003) and Hawkins and Davidson (2007). Teachers need to ensure that students do not get lost in the technical process at the expense of the planned cognitive process.

Professional learning for teachers is more effective when it involves more than skills training. To allow teachers to develop confidence in learning as an ongoing process, professional learning experiences should involve changes in attitudes, value and beliefs, as well as the obvious skills training (Phelps, Graham & Kerr, 2004). To proceed partway toward achieving this, teacher attitudes to ICT in learning was emphasised in the professional learning that was the focus of the research being reported in this paper.

Attitudes are a measure of an individual’s degree of like or dislike towards an item. Ideally, teachers should exhibit a positive attitude (like) towards the use of ICT in learning. There are a variety of
dimensions to teachers’ attitudes towards ICT (Knezek & Christensen, 2002) but the research being reported in this paper focused on teacher attitude to student use of ICT. The importance of this particular dimension of teacher attitude to ICT in learning was recognized by the Education Queensland’s instrument for measuring ICT use in the curriculum which included questions to determine the extent of ICT use (Finger, Russell, Jamieson-Proctor, & Russell, 2007) by having teachers reflect on student use of ICT in their classrooms. This large study found that teachers preferred to enhance current curriculum with ICT rather than move beyond familiar practices and actually transform the curriculum (Jamieson-Proctor, Burnett, Finger & Watson, 2006).

**Transformative Professional Learning**

For teachers to become more aware of the transforming possibilities of ICT in education they need to engage in transformative professional learning. Research has shown that a transformative model for a professional learning experience should incorporate: (i) becoming more aware of pedagogical beliefs that inform classroom practice; (ii) forming relationships that give rise to collegial and critical discussion about pedagogy; (iii) using the classroom as a site for pedagogical investigation; and (iv) reflecting on changes in beliefs (Prestridge, 2007). This model should also include (v) engaging with after-workshop support so as to promote sustainable technology-related change in the classroom (Chamberlain & Scot, 2002).

A recommended underlying philosophy for this transformative model is the metacognitive approach to professional learning. Such an approach has been shown to foster the formation of support structures and networks to help support teacher learning and also to assist teachers to pursue personally relevant goals during professional learning (Phelps, Graham & Kerr, 2004). Finally, the transformative model should be designed around learning that satisfies teachers’ needs because teachers’ attitudes toward ICT become more positive in reaction to ongoing, needs-based professional learning (Knezek & Christensen, 2002).

**Animating Learning project**

The *Animating Learning* project aimed to provide transformative professional learning for teachers on producing animations and on planning and implementing student learning experiences involving animations. The associated research aimed to determine the changes in attitudes to ICT in learning that result from teacher engagement in this professional learning experience. Teachers from a pre-existing cluster of four small K-6 government schools in rural New South Wales worked collaboratively to plan learning experiences to implement in their individual schools. These teachers were accustomed to collaborating for professional learning and were supported by university lecturers. This project was initiated by the schools, in response to their increasing awareness of the use of ICT in learning. Responding to teacher needs increased the potential sustainability of the professional learning, as did inclusion of all teachers (from two to four) at each of the four schools.

Five main events, covering one ten-week school term, were based on the transformative professional learning model as follows. Events 1 to 3 reflected the first two components of the model by providing opportunities to increase awareness of pedagogical beliefs about ICT in learning through investigating the animation process, and to form professional relationships and engage in professional discussions with teachers from the other small schools. *Event 1: Learning to animate* was a one-day workshop that assisted teachers to develop the necessary technical skills. Prior to this they engaged in relevant academic reading and on the day they worked in school-based teams to produce an animation and then collectively to develop an animation assessment rubric. This was more challenging that expected and stimulated professional conversation. *Event 2: Assessing animations* was an after-school workshop, which focused on assessing animations. Teachers shared their animations for peer-assessment, made amendments to the rubric and began to plan how animation was to be used in their teaching program. *Event 3: Developing implementation plans* was an after-school workshop, which focused on improving the learning sequences incorporating animations after sharing with other teachers.
Event 4 reflected the third and fifth components of the model by using the classroom as a site for pedagogical investigation and by providing after-workshop support for the teachers. Event 4: Implementing animating learning experiences allowed each teacher to implement his/her planned learning experience with the students completing the animations in cross-grade groups. University lecturers provided in-school support to assist with technical issues and hints on improving animations.

Event 5 reflected the fourth component of the model by allowing the teachers to reflect on the changes in their beliefs. Event 5: Celebrating learning was a one-day event held as a Premier of Animations where students from all schools came together to judge their animations based on the developed assessment rubric. Teachers and students found this event to be a worthwhile conclusion to their hard work.

Research method

To determine the changes in attitudes to ICT in learning the thirteen teacher participants completed a questionnaire before (Pre) and after (Post) the professional learning experience and also kept a learning journal. The questionnaire gauged the level of agreement with statements about attitudes to ICT in learning. Further evidence of changes in attitudes was sought from the learning journals, which teachers completed at significant points during their professional learning. The questionnaire was based on a subset of questions developed by Finger et al. (2007, p. 273) but the question stem was altered to indicate that students ‘should’ be using, rather than ‘are’ using. The questionnaire had nineteen items (reproduced with results in Table 1), each with a five-point Likert scale: strongly disagree, disagree, neutral, agree, or strongly agree. An open response box was provided for any further comments about attitude to ICT use in learning.

The questionnaire responses to each item were allocated a code from 1 for ‘strongly disagree’ to 5 for ‘strongly agree’. The average level of agreement across teachers was calculated for each item and then the items were ranked from 1 for the most agreement to 19 for the least. If a number of items were tied then each received the average of the ranks those items jointly occupied. The ‘change’ in ranking was calculated for each item by subtracting the Pre ranking from the Post ranking. A positive ‘change’ indicated a relative increase in agreement to the item. A significance test of the rank correlation was used to determine whether there was consistency in the two sets (Pre and Post) of rankings and thus no change in attitudes. Qualitatively, the learning journals entries were inspected to elaborate on the trends observed in the quantitative analysis.

Research results

Thirteen teachers completed the Pre questionnaire but only ten completed the Post questionnaire. Item ranks for both the Pre and Post responses are presented in Table 1. The rank correlation based on the changes, $r' = 0.85 \ (p < 0.01)$, indicated that the Pre and Post rankings were strongly correlated. Thus the ranking of level of agreement in the Post responses was consistent with the ranking in the Pre responses, indicating that there was no noticeable change in teacher attitudes.

However, these results are muddied by the fact that the level of agreement was fairly high for most of the items in both Pre and Post responses. The only item to register a ‘disagree’ or ‘strongly disagree’ response in either the Pre or Post responses was ‘have access to an electronic whiteboard’. This meant that for 18 of the 19 items the responses only ranged from neutral (3) to strongly agree (5). Even within this range there were relatively few ‘neutral’ responses, on average just over one per teacher, but they were not spread evenly, e.g., in the Pre responses most ‘neutral’ responses were given by just two teachers.

Despite the lack of significant change, the limited range of possible responses makes it worth noting the items whose ranking altered by at least three places. Three items were ranked higher (in the Post)
responses: #12 - use ICT to support their learning; #9 - be allowed to discover how to use ICT; and #7 - have the opportunity to help other students to use ICT when learning. Four items were ranked lower (in the Post) responses: #18 - use ICT to engage in independent learning; #6 - have the opportunity to choose whether they will use ICT for specific learning tasks; #13 - use ICT to demonstrate what they have learnt; and #5 - be shown by demonstration how to use ICT. The further comment open-box was not completed by any teachers for the Pre questionnaire and by only two for the Post: it’s a great teaching tool and I feel that IT is vital to the future education of all children and adults. Note that direct quotes from teachers are italicized.

Table 1. Item rankings based on level of agreement with the item

<table>
<thead>
<tr>
<th>Item</th>
<th>Pre</th>
<th>Post</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. have access to ICT (computers etc) in the classroom.</td>
<td>1.5</td>
<td>1.5</td>
<td>0</td>
</tr>
<tr>
<td>2. have access to the internet in the classroom.</td>
<td>1.5</td>
<td>3.5</td>
<td>2</td>
</tr>
<tr>
<td>3. have access to an electronic whiteboard.</td>
<td>19</td>
<td>19</td>
<td>0</td>
</tr>
<tr>
<td>4. use ICT in learning every day.</td>
<td>17</td>
<td>18</td>
<td>1</td>
</tr>
<tr>
<td>5. be shown by demonstration how to use ICT.</td>
<td>3.5</td>
<td>6.5</td>
<td>3</td>
</tr>
<tr>
<td>6. have the opportunity to choose whether they will use ICT for specific learning tasks.</td>
<td>11</td>
<td>16</td>
<td>5</td>
</tr>
<tr>
<td>7. have the opportunity to help other students to use ICT when learning.</td>
<td>5</td>
<td>1.5</td>
<td>-3.5</td>
</tr>
<tr>
<td>8. work individually when using ICT.</td>
<td>7.5</td>
<td>6.5</td>
<td>-1</td>
</tr>
<tr>
<td>9. be allowed to discover how to use ICT.</td>
<td>7.5</td>
<td>3.5</td>
<td>-4</td>
</tr>
<tr>
<td>10. have the opportunity to work collaboratively when using ICT.</td>
<td>7.5</td>
<td>6.5</td>
<td>-1</td>
</tr>
<tr>
<td>11. use ICT in every curriculum area.</td>
<td>18</td>
<td>16</td>
<td>-2</td>
</tr>
<tr>
<td>12. use ICT to support their learning.</td>
<td>11</td>
<td>6.5</td>
<td>-4.5</td>
</tr>
<tr>
<td>13. use ICT to demonstrate what they have learnt.</td>
<td>7.5</td>
<td>10.5</td>
<td>3</td>
</tr>
<tr>
<td>14. use ICT to plan and/or manage projects.</td>
<td>14.5</td>
<td>16</td>
<td>1.5</td>
</tr>
<tr>
<td>15. use ICT to communicate with others locally and globally.</td>
<td>16</td>
<td>14</td>
<td>-2</td>
</tr>
<tr>
<td>16. use ICT to provide motivation for curriculum tasks.</td>
<td>11</td>
<td>10.5</td>
<td>-0.5</td>
</tr>
<tr>
<td>17. use ICT to engage in sustained involvement with curriculum tasks.</td>
<td>14.5</td>
<td>13</td>
<td>-1.5</td>
</tr>
<tr>
<td>18. use ICT to engage in independent learning.</td>
<td>3.5</td>
<td>10.5</td>
<td>7</td>
</tr>
<tr>
<td>19. use ICT to develop deep understanding about a topic.</td>
<td>13</td>
<td>10.5</td>
<td>-2.5</td>
</tr>
</tbody>
</table>

Some teachers recorded entries in their learning journal a few times a week but for others it was less frequent. Much was learnt about the teacher attitudes from what they recorded about their learning and their students’ learning, with one teacher concluding what a great learning experience for us all. Entries on technical problems gave the impression that the teachers and students were learning together.

There were four main ideas reflected in the entries about teachers’ own learning. First, some described discomfort and lack of confidence in their own learning situation. Indicators included: feeling sheer panic on the first day especially when surrounded by others who know what they were doing; believing that presumptions were mistakenly made that basics were understood; finding it easy to let someone who knows exactly what he or she is doing to do the work; and wanting more explicit instruction. Second, satisfaction was expressed by most by the end of the project. For example, one teacher felt that things became clearer as the project progressed and another was especially appreciative of the chance for small schools to get together and share work. This satisfaction was not felt by one teacher who stated: I didn’t feel in the end that I mastered the whole project as other teachers did. Third, there was recognition that the process was important. For example, one teacher in expressing content with the children’s efforts explained that it’s not always the end product that is the most important thing, but the lessons/skills each child has learnt and the process as a whole. Finally, there was an appreciation of the potential of what they were learning about: I am reflecting on the whole animation process and must confess that it seemed very daunting at first. I enjoyed working with the children on this project, seeing their faces when they first viewed their own animations.
There were far more entries about the students’ learning than about teachers’ own learning. The student-focused entries were mainly about the animation process and student engagement. Related to the process, the most reported aspect was storyboarding. Although most students had a good idea of what was expected for a narrative, their initial attempts at storyboarding had disappointing depth in the detail provided. It was not until the wheels fell off during later stages such as photographing that students really began to appreciate the importance of storyboarding and took advice from the teachers. Despite pushing the importance of storyboards for thinking about each frame, one teacher recognized that students had to learn about this for themselves. This same teacher remembered when the teachers had to go through the same learning process themselves during the initial teacher workshop.

The journal entries illustrated the changing attitudes of teachers in two main ways. First, changing attitudes were illustrated through the emotive expressions used when reporting about student learning. For example, quite outstanding was used to describe the level of independent student learning and I did not believe as the reaction to how well students could complete all facets of the animation process. There was a general expectation that far more adult intervention would have been needed for the animations to be completed. One teacher observed that the students have so much confidence in their ability and went on to report that I continue to be nervous because I really am not confident myself with what we do after the photos have been taken. Another teacher concluded that’s success! about the number of students who had started creating animations at home.

Second, changing attitudes were illustrated through entries related to group work. One teacher observed that it is an eye-opener to watch group dynamics. Many entries related to student interactions in the groups including: some groups being slow to get started; students nominating who would take roles within the group; some students just not fitting in; older students helping younger students to fit in; and the conflict between controlling students. One teacher observed that a completely different group of students dominated during the animation process than would normally dominate in classroom learning situations.

Overall, there was a sense of the recognition that learning was moving forward. One teacher reported that there were lots of hiccups but this is where the learning happens. This was followed by the recognition that students should not be forced to rework to a polished product and the need to allow learning to take place as the students recognize their mistakes and ask themselves ‘What could we do next time?’ or ‘How could we do this better?’. Without teacher intervention, one student group actually voted their first animation as a ‘practice’ and decided to begin a new one.

Discussion

Overall, there was not a significant change in the pattern of attitudes towards the use of ICT in learning, after the professional learning experience about producing animations and using them pedagogically. This may have been partially due to the relatively short time frame (ten weeks); the small number (13) of teachers involved; or the relatively high level (positive) of agreement with many of the attitudinal measures even from the start of the project. From the greatest changes in ranked agreement and journal entries, there were four changes that were most apparent in teacher attitudes.

First, there was a better recognition of how students adapt, more quickly than teachers expect, to acquiring new skills and knowledge. There was less agreement with demonstration as a teaching approach and increased agreement with allowing students the opportunity to help others. Students need to be guided in their learning and encouraged to work with peers and ask questions. This approach was encouraged during the professional learning as a role model for teaching.

Second, there was an increased expectation of student capabilities when working with ICT and of student abilities to work independently. This was mainly demonstrated in the journal entries. In the questionnaire, the reduced agreement with using ICT to engage in independent learning was probably
due to interpretation as group work versus independent work, rather than using ICT without guidance as was intended. The reduced agreement with students having the opportunity to choose whether to use ICT for specific learning tasks is difficult to explain in the context of the project because the animations naturally required ICT use. Perhaps this should be interpreted as ICT should be used whenever possible.

Third, there was an increased acceptance in teaching approach of allowing students to learn about ICT independently rather than demonstrating everything. This was clear from the increased agreement with students being allowed to discover how to use ICT. Again, this was a process that was encouraged in the teacher professional learning.

Finally, there was an increased recognition of the value of using ICT to support learning, as indicated specifically by increased agreement with this item in the questionnaire and more generally, by the level of amazement at the power of the animation process when the students were learning. Interesting, the decreased agreement with ICT being used by students to demonstrate what they have learnt could be interpreted as indicating recognition of uses of ICT in learning beyond use as a presentation tool.

Conclusion

This transformative professional learning experience, focused on the animation process, was powerful at improving the teacher knowledge and skills; assisting teachers to rethink their pedagogy and producing a more positive attitude towards aspects of ICT in learning. The researchers strongly recommend that teachers be provided with more opportunities to learn about how to incorporate animations in particular, but ICT more generally, into their teaching. These experiences should include reflection on the student learning as a tool for influencing attitudes towards teaching. Future research should include a larger cohort of teachers, consider the change in attitudes after professional learning spread over a longer period of time and focus on identifying those aspects of the professional learning process that most contribute to changes in teacher attitudes to the use of ICT in learning.

References