Premier’s Adobe Information and Communication Technologies Scholarship

Creative Use of Mobile Devices in the Classroom

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The focus of my study tour was to investigate the creative opportunities mobile devices such as iPads are generating in the classroom in terms of both teaching and learning. My aim was to discover how fellow educators are using these devices for instruction in innovative ways and also how students are responding to this.

The study was an opportunity to provide a documented showcase of innovative and creative educational practices using mobile devices in a variety of different contexts/subjects across a range of year groups that could motivate and inspire teachers and students alike. The study has the capacity to enable global connections between schools in NSW and those in international settings. Mobile devices allow creative teaching ideas to be shared with ease. There is potential for strong educational networks to arise.

Each NSW syllabus contains an ICT perspective and in the TAS learning area new and emerging technologies are a fundamental part of the mandatory technology syllabus. The national curriculum ACARA is developing certainly has technology as a focus. This study is extremely relevant as mobile devices are an emerging technology with the capacity to highly engage students.

School visits – a summary

*Finland*

Finnish schools have for many years enjoyed a reputation for maintaining high educational standards with a system based on excellence and equity for all students. The schools I visited in Finland included Kuopio Secondary School, Muurame Secondary School and Voionmaan Secondary school. Each one certainly had a strong focus on educating all aspects of each child, including academic, vocational, athletic and domestic. In addition, I had the opportunity to attend the mobile summer school conference (Mobiilikesäkoulu MobileSummer 2014,an iPad conference for teachers).

The program I had particular interest in investigating in Finland was the Mobiluck Project. Essentially this program comprised a group of six Finnish upper secondary high schools coming together to share ideas on the use of technology in the classroom. The schools involved in the project were designed for elite young athletes (sports high schools) whose students were often involved in intensive training camps in their specialised sport for extended periods of time. There was a concern that many students were disengaging from their studies while they focussed on developing their athletic ability.

The idea for this project originated from Twitter conversations between headmasters (principals) and IT specialists, including;

* + Headmaster Juha Torniainen
  + IT specialist/Math teacher Mr. Lari Härkönen.
  + Headmaster Mr.Aki Puustinen,
  + Mother language teacher Mr.TimoIlomäki
  + Jukka Sormunen, Head of Mobiluck Project

As a group of technology savvy educators they were sharing ideas on how they were using technology in classrooms within their respective schools to enhance learning outcomes and engage disinterested students. They decided to apply for a grant from the Finnish government to fund an intensive technology based program and it was Jukka Sormunen who then took on the role of shaping and guiding the Mobiluck Project.

The original idea was to use mobile devices such as iPads to extend the classroom learning environment to the outdoors in an attempt to engage students. This worked extremely well and led to developing lessons based on flipped classroom principles, gamification and augmented reality.

Significant funding went into IT infrastructure within each school, including investing in hardware for classrooms comprising of iPads, computers linked into a central school system, data projectors, ceiling mounted microphones and video recording equipment. Every teacher was issued an iPad and received professional development in its use. Teachers were encouraged to record their lessons and these were then saved so students away on training camps could access their lessons and maintain their pattern of study.

Having the capacity to record lessons with ease inspired some staff to explore the concept of ‘flipping’ the classroom. This pedagogical model allowed all students to gain exposure to new concepts outside of class via short video lectures that they could access away from school. When students then returned to class, the focus was on exercises, projects and activities that would traditionally be issued as homework. Many staff commented on the success of this style of lesson delivery and the increase in student participation and enthusiasm for this teaching and learning model.

As the schools involved in this project were heavily involved in athletic and sports programs it was a natural progression to explore the concept of ‘gamification’, which essentially refers to the application of game design and principles to non-game contexts such as classroom education. The benefit of the gamification model is that students are permitted to fail, and are comfortable when this occurs, as they understand that there are further opportunities to persevere and then overcome learning hurdles in order to succeed. The gamification model also provides the immediate feedback that is so strongly sought after by adolescents.

Classroom based technology lends itself well to gamification and several teachers in the Mobiluck Project saw a significant increase in motivation through competitive engagement, whether students were competing against fellow classmates, students from other schools within the Mobiluck Project or even against themselves. Learning games were developed that required collaborative problem solving and social connection with students from other schools, which proved to be highly successful for student participants. Examples of games that can be accessed via apps online and loaded onto iPads include:

* + Duolingo, an app which allows students to learn languages (some Finnish students were using this to learn English). Points are awarded as language skills improve and students receive feedback on the quality of their answers from other students worldwide who are competing with them
  + The World Peace Game, an online game which encourages students to explore the global community through problem solving issues as they arise
  + Brainscape, an app which allows the development of flashcards for study purposes for use in team or individual settings. Students or teachers can develop flashcards and challenge one another
  + Socrative, an app that allows the development of online quizzes with the benefit of immediate feedback.

Teachers involved in the Mobiluck Project also used their iPads to explore augmented reality using apps such as Aurasma and Layar to create technology based learning experiences for their students. These apps brings images, video footage, animations and digital content together to create augmented reality experiences with both students and teachers as developers.

The funding for the Mobiluck Project also financed the development of ‘break out areas’ for iPad classes, which essentially consisted of open plan spaces with couches, bean bags and soft furnishings in which classes could meet, put their feet up and learn in a less formal setting. In addition, areas were set up outdoors with shade, benches and landscaping to be utilised in warmer months. Teaching staff commented on the popularity of these learning spaces with students and the positive impact they had on learning.

*Sweden*

Sollentuna is an area not far from the centre of Stockholm. The Sollentuna Educational District had come under some criticism for its bold move in considering doing away with text books in favour of iPads in classrooms. I was able to meet with Mimmi Forsgren from the Sollentuna Educational Board who was very positive about the impact the financial commitment to enhancing technology in the school districts had on improving student learning outcomes. Significant financial investments were made in all schools in the Sollentuna area for purchasing mobile devices for use in the classroom.

Many of the schools within Sollentuna district began with iPads. However, many have invested in Google Chromebooks to take advantage of their capacity to store data ‘in the cloud’, allowing student access to all teaching and learning activities at both school and home.

Sollentuna International School were using Chromebooks that had been leased and issued to students school-wide. Ingela Wall, Head of School, and Darren Maharaj, Information Technology specialist and classroom teacher, told me the reason for this was based on the robust nature of Chromebooks and the fact that they weren’t required to store a great deal of data. They were simply a mechanism for facilitating learning activities, a tool for learning.

To implement acceptance for using Chromebooks within the school, all lesson preparation, class work, student activities and assessable tasks were to be uploaded prior to the commencement of each term and stored on iCloud. Teachers, parents and students then had access to this information from both home and school.

Teachers used the Chromebooks in a variety of ways. One classroom I visited had developed a shared class folder and were collaboratively working on a class project to create an animated guide on volcanoes. Each student was aware of the protocols of working in a shared environment and showed great respect for each other’s contributions. The class had previously developed the marking criteria for the task and were in the process of checking through the criteria to determine whether the project was fulfilling requirements. This led to suggestions by peers to individuals responsible for different aspects of the project. Each student was completely immersed in their area of responsibility but could also see what classmates were working on via the interactive white board at the front of the classroom.

In Sofielundsskolan the staff were using Chromebooks and other smaller style laptops in classrooms. Students commented that they were in favour of this system as they were all well prepared for class because they were able to access term overviews and begin researching areas of interest in advance if they wished to. Parents were also in favour of this approach as they were able to log on to their respective children’s accounts and clarify for themselves the school and class expectations for the term. Staff commented that the new system initially resulted in a significant amount of time being spent on technical professional development and adjustments to teaching and learning plans (being adapted to an online forum); however, theyfelt that the benefits for students (and the positive comments from parents) outweighed any negative perspectives.

*United Kingdom*

The impact mobile devices were having on improving student outcomes and engagement in the schools I was able to visit in England and Wales was impressive. New Norfolk School in Kings Lynn north of London were able to produce data showing significant improvements in both numeracy and literacy since introducing iPads across the school. Head Teacher Greg Hill was extremely passionate about the impact these mobile devices were having on learning within his school and felt that the investment was well worth it. Each student was issued with an iPad, and this was coupled with interactive white boards and intensive teacher training on how to maximise learning outcomes for students using these devices. There was also a significant investment in reliable and fast internet connectivity.

Staff spoke of the increased enthusiasm by some of the most disengaged students since becoming an iPad school three years prior. Students were using their iPads to create animated stories, formulate revision quizzes and film each other in role play scenarios.

The head teacher (principal) at Gloucester Academy, Showk Badat, had used mobile devices in his previous school, ESSA Academy, to turn the school from one of the poorest performing schools in England to one of the best. He was extremely passionate about placing learning into the hands of students and felt that iPads provided the platform from which to best do that. Showk was a strong advocate for a transparent and universally accessible curriculum and for social justification and equality. He feels that mobile devices are a mechanism for achieving both.

Interestingly, at Gloucester Academy, there was a move toward a clean desk policy for staff. Essentially the underpinning philosophy was that with all of the technology now in the hands of educators, hard paper copies of teaching and learning programs, student activities and tasks were no longer required. Each staff member was issued with a Macbook and the expectation was that all teaching related material be created using this device and was then to be stored in the online learning area the school had created on the cloud. Staff were being encouraged to keep their desks clear of all paperwork and maintain an austere, professional work environment. The savings in paper have been significant and these cost savings have been reinvested in technology.

A program I had great interest in investigating in Wales was the concept of the ‘digital leader in the classroom’. Casllwchwr Primary School was one of the first schools in Wales to embrace iPad education (and were the first in the area to go one-to-one) and have made significant inroads in terms of improving learning outcomes for students. The school has put in place the concept of digital leaders, a group of senior primary aged students who have been through a rigorous selection process in order to become facilitators of technology in their respective classrooms.

The students receive the same training staff members do in the use of iPads and then support staff across the school for different year groups when they are using iPads for learning activities. Initially staff and digital leaders were introduced to an app every four weeks, and were then encouraged to explore the ways in which the app could be used within classrooms to enhance learning and improve engagement. Digital leaders who attended training were also able to put forward ideas about how teachers could use these apps. This model resulted in a core set of apps being selected for use throughout the school, and staff then showcased the progress they were making with various groups using this technology in their classrooms.

Digital leaders were responsible for creating and assisting with class blogs and were responsible for building capacity in younger class members who demonstrated potential to become future digital leaders. An office space available to them and after initial selection as digital leaders, they had to prove that they were suitable during a probationary period. The digital leader concept was showcased to a number of surrounding schools and has now been embraced by a large number of schools across the UK.

In addition, Casllwchwr was able to demonstrate (through data), how using iPads and focussing on the pedagogy had improved learning outcomes, particularly in reading. The apps they were having most success with included Showby, Garage Band, Aurasma, Explain Everything and various QR code readers.

At the TeachMeet Pedagoo South West conference, I met with many teachers who have embraced the use of mobile devices in their classrooms and were also speaking of the benefits of using social media such as Twitter, Facebook and Instagram within the classroom to engage students. They encouraged fellow teachers to create a twitter account and use it for professional development by following fellow tweeters such as @literacylender, @TeacherToolkit, @InnovateMySchl, @greatergadsby, @dmandrews15, and @dylanwiliam.

Conclusion

The educational leaders I met with are completely immersed in technology and the majority of them were part of international learning groups using Twitter and educational blogs to promote technology based education. The technological hardware varied from school to school; however, the underpinning philosophy of transparency of curriculum was very consistent. I also found that educators in these countries were focussed on student engagement and data driven outcomes.

Using mobile devices to improve learning outcomes was very successful. I observed that in schools with a strong technology focus teaching staff often became empowered to then explore new and emerging technologies and pedagogical approaches, as evidenced in the Finnish Mobiluck project.

The benefit to students through using mobile learning devices in terms of improvements to learning outcomes and also engagement in classroom activities was extremely evident. Students were often curious to explore the capacity of the devices they were using, happy to work collaboratively and resilient when they were faced with problems when using them.

Having access to the cloud for school storage of data and then investing in hardware, either leased or purchased, Chromebooks or similar appeared to have many strengths. I feel this model requires further exploration. The ease with which students were able to progress through tasks and their confidence in doing so warrants this.

The purchase of iPads for each student to use as a personal learning device was a significant investment by the governing bodies of the schools I visited. As NSW schools move into implementing Local Schools, Local Decisions, schools could possibly consider an investment in either iPads or Chromebooks. The pedagogy to support this expenditure would need to be considered and the cost of this factored into any decisions made to move in this direction.

The digital leader concept was very successfully implemented in many of the schools I visited in the UK and I believe would translate well to the New South Wales education system, particularly in primary school settings. We are currently investigating how this model could work in a secondary school here at Hunter River High School. To date we have appointed two Year 10 students, one male and one female, as digital leaders. Both students attended a two-day iPad conference with two members of our technology committee and have been issued with an iPad each. They are currently learning how to use identified apps such as Explain Everything and Aurasma and have supported teachers who book a class set of iPads in using these devices and apps in the classroom.

In each educational institution I visited, all students had complete access to the internet and there was no evidence of banned access to sites such as YouTube, Twitter, Facebook and Instagram; in fact, quite the opposite – they were being used as educational resources. The focus at the school level was to educate the child about safety on the internet rather than banning particular aspects of its use. I believe some consideration could be given to changing this in New South Wales and placing access to these sites in line with other states.

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PedagooSouthWest Education conference

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