

**Will using an iTunes U course,
with the Padagogy Wheel,
result in effective individualised learning?**

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Abstract

The purpose of this paper is to share the results of a study that focused on investigating the effectiveness of using an iTunes U course with the assistance of the Pedagogy Wheel. Stage Three teachers tested to see if this results in effective, collaborative and individualised learning for Stage Three students.

In society, many schools, now immersing themselves in web-based delivery of collaborative and individualised learning in education, has become increasingly popular. There is wonderful benefit in educational institutions working collaboratively to modernise the landscape of learning for students.

This paper will share the findings of a study that looked at the experiences of teaching and learning action research in a technologically driven environment. As educators, we have built networks, shared resources and devised a unit of work that provided students with an alternative way to learn and respond creatively.

Introduction

In recent years, Catholic Schools in the Sydney Diocese have moved towards greater implementation of technology in primary classes. (Catholic Education Office, Sydney. 2009). Technology can have a reciprocal relationship with teaching. The emergence of new technologies pushes educators to understand and leveraging these technologies for classroom use; at the same time, the on-the-ground implementation of these technologies in the classroom can (and does) directly impact how these technologies continue to take shape (Klopfer, Osterweil, Groff & Hass, 2009).

Participants

The participants involved in this study are 116 students at an Australian (Sydney) Primary School. Fifty-eight students are in Year Five and fifty-six students are in Year Six. The students are digital learners who are part of a pilot BYODD (Bring Your Own Designated Device) to school project that commenced in January, 2013.

Thus, all students are competent in using iPads as an effective tool for learning. This competency varied as Year 6 were previously exposed to using iTunes U and the Padagogy Wheel. Year 5 competency has been further developed through the BYODD 2014 as well as, continued teachers professional development and training.

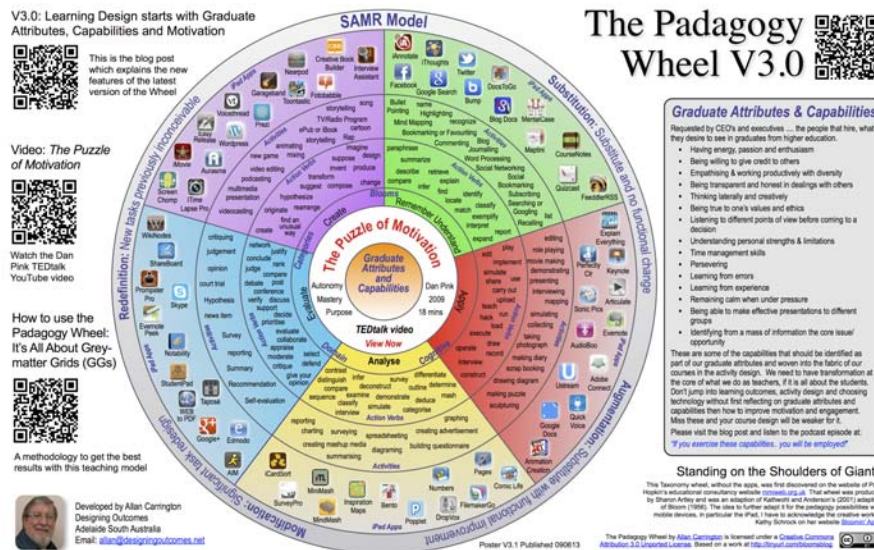
Procedure

The iTunes U course is based on a 10-week *Primary Connections: Physical Sciences - It's Electrifying* unit. One of the goals of the course is to maximise the interaction between the content of the unit and the skill development of students. In order to encourage this interaction, information is delivered to students via iTunes U, which can be easily accessed on any device. Students record their own responses to lesson tasks as well as have opportunities to discuss with other students about their work. Responses are recorded on students' own device through the creation of an iBook to monitor their learning, as well as their Science and Technology Journal. Formal assessment is the completion and presentation of a "learning montage" (responses to all tasks) in their iBooks.

Students are invited to enrol into the course, which includes resources and links to websites, videos and podcasts. The course is supplemented with Allan Carrington's "The Padagogy Wheel" that can be downloaded from the course (Carrington, n.d.). A complete overview of the course can be accessed at the following URL to enter the course:

Allan Carrington's: The Padagogy Wheel

Table 1.1



The Padagogy Wheel is an infusion of a number of educational ideologies. It links the SAMR model and Blooms Taxonomy into a way that allows students to take control of their own learning path. The SAMR model is about how carefully selected apps can drive and support teaching and learning. We are strong believers in the work of Dr. Ruben Puentedura and his SAMR model as framework to the Padagogy wheel (Puentedura. n.d.).

The Padagogy aligns itself with the Australian Curriculum confirming that children adapt to new ways of doing things as technologies evolve, and limit the risks to themselves and others in a digital environment. (Education Services Australia, 2014) At the core of the Padagogy Wheel are the 'General Attributes and Capabilities'. These capabilities list the attributes that are highly desirable in the workforce and were identified by CEO's and executives who named the qualities that they desired in graduates from higher education.

Consider this, what does an excellent student look like? How do they work? What work habits do they have? The attributes at the core of the Padagogy Wheel promotes these qualities. Contemporary pedagogy challenges us to move away from a simple pass/fail mentality and move our students into a situation where they can

think deeply. We want capable students who have the attributes of creative and lateral thinking and students who are passionate and enthusiastic. Also, they need to have good time management skills and are able to learn from their errors. They should also be students who are able to collaborate with others and can learn from new experiences.

Using the Pedagogy Wheel, challenges educators to incorporate transformative pedagogy into their curriculum. This requires a mindshift away from traditional approaches and a swing towards change. The world of education is changing and so are the expectations of what students are able to do. The only constant is change. Traditional education is fairly static, in such cases a teacher is transferring knowledge from the one who knows to those who do not. In simple terms, this is an effective transfer of basic facts. However, this approach does not prepare for change. This new wave of learning allows educators to build and facilitate critical thinkers. Critical and creative thinking are integral to activities that require students to think broadly and deeply using skills, behaviours and dispositions such as reason, logic, resourcefulness, imagination and innovation in all learning areas at school and in their lives beyond school. (Education Services, 2014)

Transformative pedagogy involves engaged learning. It is democratic and its inherent flexibility allows for change in the learning process. A relevant education is not limited to a classroom, but needs to seek to be contextualised by issues, surrounding areas and people, as parts of the learning environment (Bjørke. 2014).

Allan Carrington talking about the Pedagogy wheel.

“The Pedagogy Wheel was born out of a desire to help teachers at the coalface of teaching. I wanted a model that could be applied to everything from curriculum planning, development, writing learning objectives and designing student centered activities. Then, quickly help teachers access relevant educational technology e.g. individual iPad apps or sequences of apps, to enhance those activities. Finally, to help teachers use that technology to redefine activities to include tasks previously inconceivable. I believe this will increase student engagement, improve learning outcomes and empower a student towards transforming into an excellent graduate.”

This model is a work in progress ... always under review and improvement. Remember, its purpose is a reminder to teachers to rethink everything they are doing. A warning: ignoring steps is in my opinion, part of the reason some of our teaching and learning, especially in Higher Education, is so ineffective in bringing about transformation. It is helpful to think about the Wheel as a number of grids through which you filter what you are doing – a way of thinking.” (Carrington, n.d.)

In 2012, Allan Carrington was awarded an OLT National Citation for Outstanding Contributions to student learning. He is an Apple Distinguished Educator and created the ‘Padagogy’ wheel while working at the University of Adelaide.

To hear Allan Carrington explaining the essence of the Padaogy Wheel visit:

<http://tinyurl.com/padwheelvid>

Literature Review

iTunes U Courses are specifically designed for educators to implement in their classrooms (Apple, 2014). It was originally created for tertiary level education, however, credible research has proven it is an effective learning tool for students in Primary Schools (Sitkins, 2012).

Networks are developing in educational circles across the world and within them are the grassroots efforts that will shape the future of education. iTunes U courses let teachers give each class a customised learning experience. Teachers can create and manage their course and students can experience it all from the iTunes U app on an iPad. (Apple Inc, 2014) The public iTunes U library represents one of the best resources occurring in educational circles today. The free sharing of resources to improve the art of teaching without expecting something in return has transformed teaching and learning experiences worldwide.

A 2008 meta-analysis of 41 studies found a strong link between giving students choices and their intrinsic motivation for doing a task, their overall performance on the task, and their willingness to accept challenging tasks (Patall, Cooper, & Robinson, 2008). However, the researchers also found diminishing returns when

students had too many choices: Giving more than five options produced less benefit than offering just three to five. The researchers concluded that with student choice, "too much of a good thing may not be very good at all" (p. 298).

iTunes U provides one central app where students can keep all their lesson materials, make notes and track homework assigned to them by the managers of that course. If students are absent from class, they can still receive all the lesson materials and content. If a teacher is absent, pupils can receive the lesson from the teacher via email or notice on class site.

iTunes U as a replacement for the classroom experience. It provides a single central location for class documentation, notes and materials on a student's device and educators expect it will enhance and extend student interaction and learning.

There are noticeable benefits with using iTunes U to deliver content to students.

These include:

- Setup: Simple share the enrol code with the students and check the roster to control who has access.
- Student organisation – Setting up 'in-session' courses in iTunes U Course Manager allows you to assign a 'due date' to each assignment. This allows your students to receive push notifications and view a calendar of assignment dates which they can manually tick when each one has been completed.
- Paperless – iTunes U allows you to easily share any documents with your students. They can then access these files from their devices and open them for editing. Considerable cost savings should be possible. This is an area that we looked into as we wanted to become paperless in Stage Three.
- Differentiation is achieved through providing a variety of resources for the students and their learning needs.
- A new way of learning - this kind of learning opens up a whole world of opportunity for students. It prepares them to be organised for Secondary schooling and beyond.

Data Collection and Data Analysis/Interpretation of Results

In order to establish if using an iTunes U course with the Padagogy Wheel would result in effective, collaborative and individualised learning for Stage Three students, surveys were administered and completed by the students and teachers involved in the Science and Technology Unit. The results of these surveys were analysed and are displayed in the graphs below.

Student Surveys

To gain a greater understanding of the effectiveness of this unit, several student surveys were conducted in this study. Firstly, all students in Stage Three were asked the following two questions.

1. Did the "It's Electrifying" iTunes U Course give me opportunities to choose

what I wanted to research?

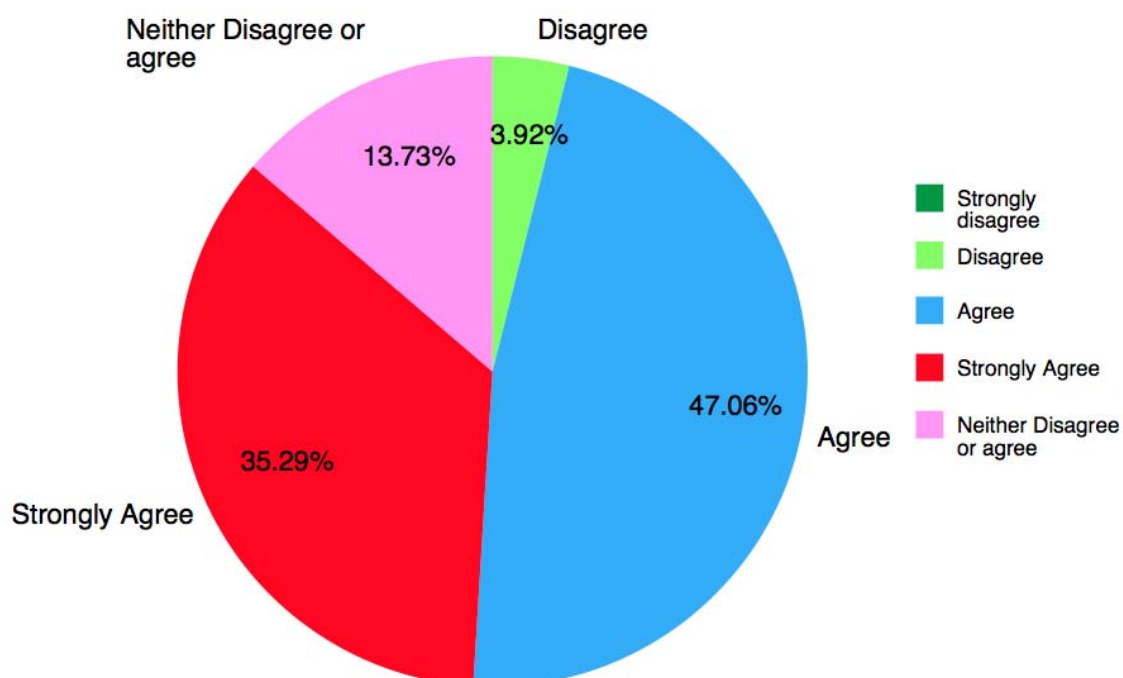
2. Did the use of the Padagogy Wheel, through an iTunes U Course help me learn better compared to previous Science and Technology units?

The results of our student survey shows that 90% of the students either strongly agreed or agreed, that the "It's Electrifying" iTunes U Course gave them opportunities to choose what they were interested in learning about and researching. The remainder of students neither agreed or disagreed, choosing to sit on the fence. This result shows that the overwhelming majority of students believe that student choice was honoured in this unit of work. Furthermore, graph 1.3 shows the results of the survey that the teachers completed, informs that 100% of the teachers involved strongly agreed that all students were given ample opportunities for independent learning. The written responses show that the students and teachers thought there was student choice as students were able to select their own action verb, activity and app for each of the Blooms Taxonomy stages on the Padagogy Wheel (See Table 1.1). Clearly, the results from these two surveys, confirms that student choice was provided throughout the unit of work.

Graph 1.2 shows that 82.38% of the students thought that using the Padagogy Wheel through an iTunes U Course helped them to learn better in comparison with

previous Science and Technology units . Only 3.92% of students disagreed and a further 13.73% of students neither agreed or disagreed. These results inform that every eight in ten students thought that not only was the Padagogy Wheel, combined with an iTunes U Course an effective way to learn, but it enabled them to surpass the amount that they learnt in Science and Technology, without using these tools.

Graph 1.2 Did using the Padagogy Wheel through an iTunes U Course help you learn better compared to previous Science and Technology units?



Teacher Survey

All teachers involved in leading this unit completed a survey that included scale questions that required written responses. The purpose of the teacher survey was to gain light on whether or not teachers thought the unit was effective in terms of student learning. The teacher survey also aimed to find out why teachers thought this unit was effective or not.

Teachers were asked: *When comparing your pre and post assessment results, could you report significant growth in your students learning?*

The data collected from this question states that 75% of teachers agreed and 25% of teachers neither agreed or disagreed. In their written responses, teachers informed that their students displayed a growth in confidence in terms of being responsible for their own learning. Teachers also reported that the adequate opportunities for how and what students researched, as well as the delineation of their findings, motivated students and resulted in academic achievement. Teachers further stated in their written responses that all students showed academic growth, however, a small minority did not show significant growth. The teachers believe this is due to the fact that these students required heavy scaffolding and worked through the unit of work at a slower pace. A number of studies outline the variables that can affect student learning such as knowledge of pedagogy, number of children with special needs, interest in the key learning area, learning styles and prior knowledge (Pine, 2009), is a prime example..

Selective Survey (administered via google form)

In order to gain an understanding as to what degree certain groups of students thought about the iTunes U course with the Padagogy wheel, a survey was administered to a smaller selection of students. The focus was on how they viewed the course as an effective, collaborative and individualised way of learning. The groups of students surveyed were males and females, that were either gifted and talented, core or ESL students.

To ensure that the survey was fair, an equal number of male and female students from each grade and academic ability level were chosen for this selective survey. This selective survey asked students for their:

- name,
- gender and
- grade level, to ensure results could be grouped appropriately.

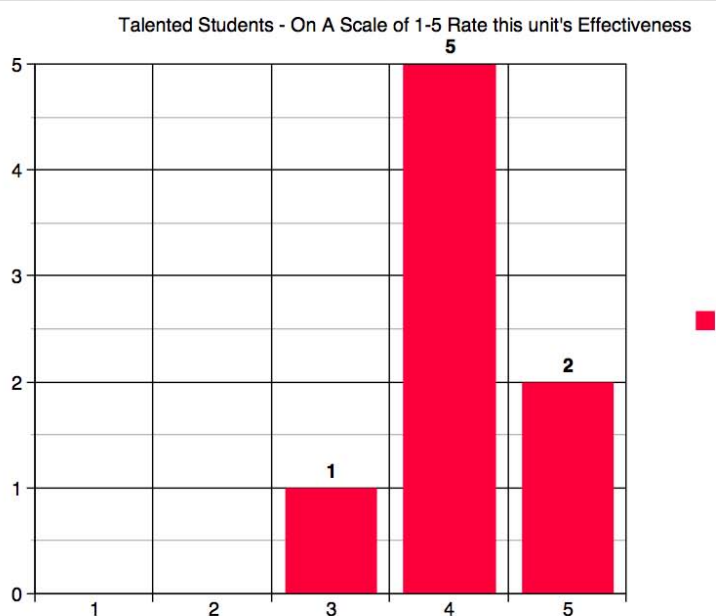
Students were also asked:

- On a scale from 1 to 5 (1 being not effective and 5 being very effective), how

effective do you think was the iTunes U Course compared to previous Science and Technology units? Students were asked to explain their response in words.

Gifted and Talented Students

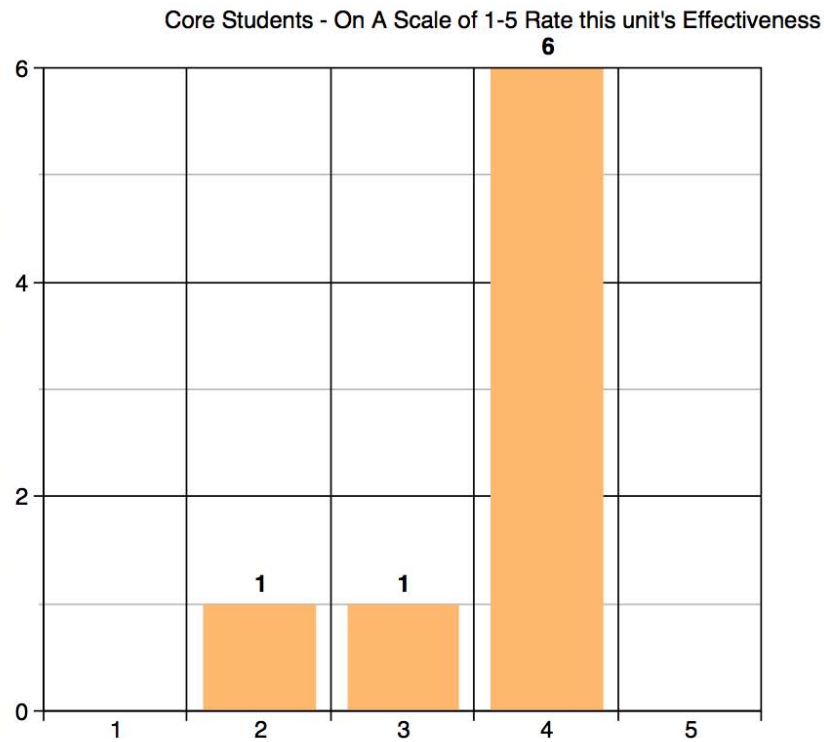
The results show that 25% of the gifted and talented students strongly agreed with this question and that 62.5% of them agreed. The remaining 12.5% neither agreed or disagreed. Therefore, a total of 87% of students either agreed or strongly agreed that the iTunes U Course compared to previous Science and Technology units, was a more effective way of learning.



Core Students

The core students did not rate the course to be as effective as the gifted and talented students and none of the core students selected the strongly agreed option.

However, exactly 75% of students agreed that the iTunes U Course, compared to previous Science and Technology units, was a more effective way of learning. 12.5% of core students neither agreed or disagreed, and a further 12.5% thought the course was an ineffective way of learning.

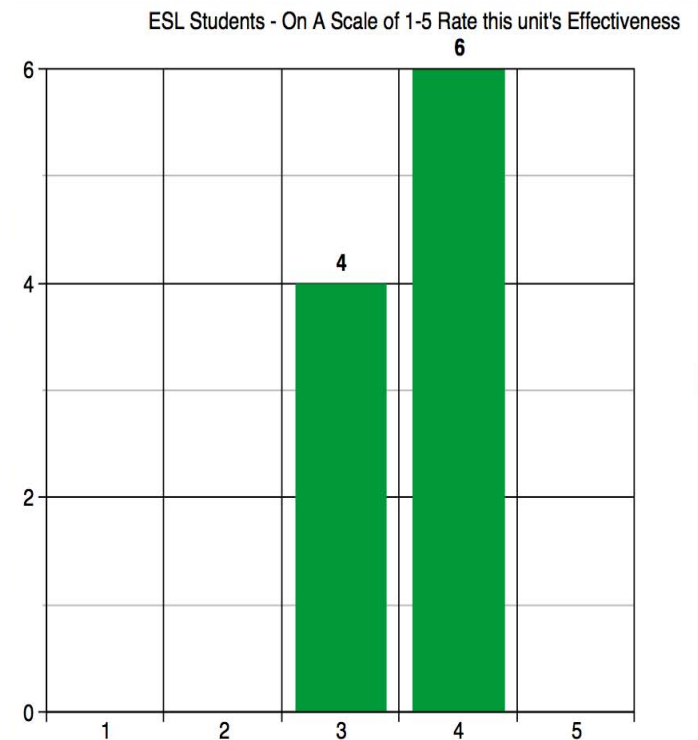


English as a Second Language Students

The English as a Second Language (ESL) students survey reported that 75% of this group of students agreed that the course was an effective way of learning, whereas the remaining 25% neither agreed or disagreed.

Comparison of Academic Groups of Students

The selective survey shows that overall the gifted students found the course to be a more effective way of learning than the other groups of students, as the results show that 87% of gifted students either strongly agreed or agreed that the iTunes U Course compared to previous Science and Technology units, was a more effective way of learning, as opposed to 75% of both the core and special needs students.



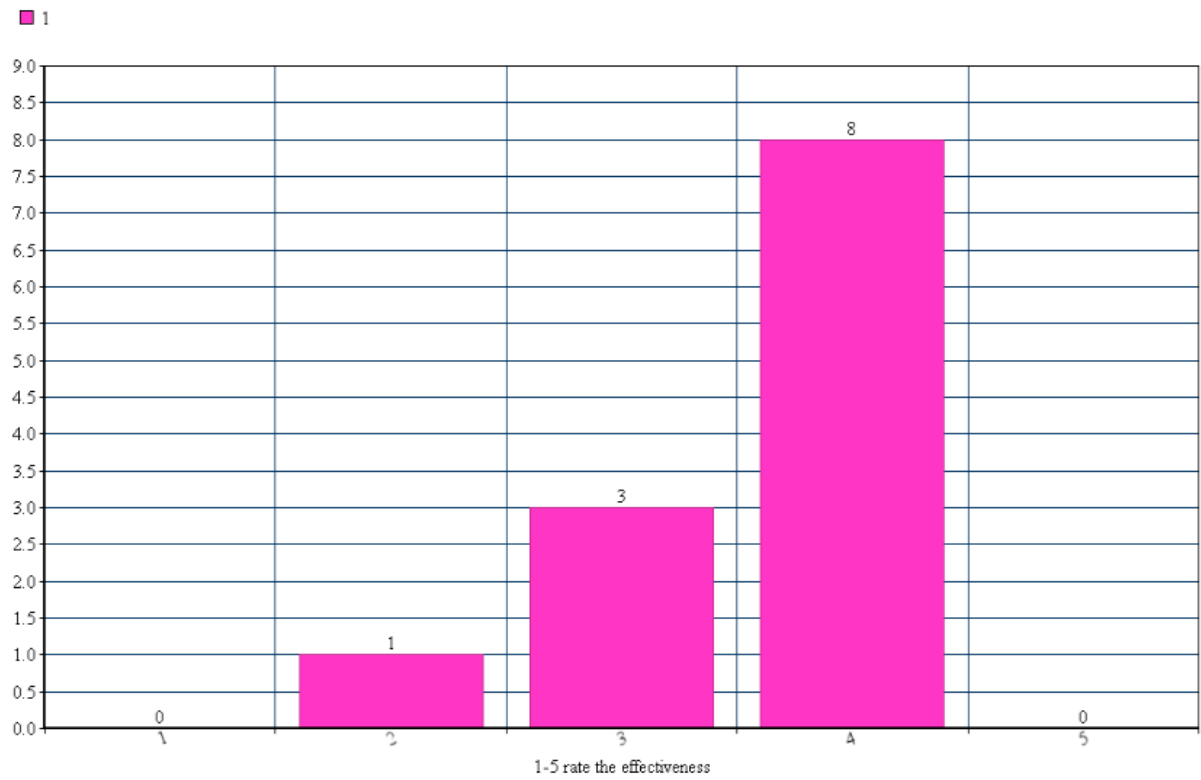
Both the gifted and talented and core students groups had 12.5% of students neither agree or disagree with the statement. Whereas, double the amount of ESL students, a total of 25%, ambivalently selected this option.

The results also show that none of the gifted and talented students or ESL students disagreed whereas 12.5% of the core students did disagree.

Gender Results

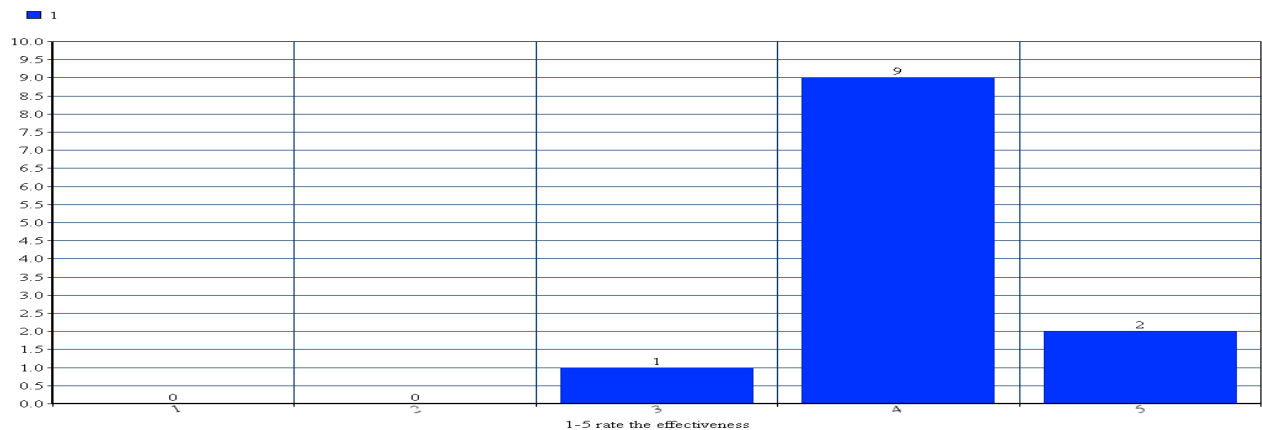
Female Students

The results show that 66% of female students agreed, 25% neither agreed or disagreed and 9% disagreed that the iTunes U Course, compared to previous Science units, was a more effective way of learning.



Male Students

The results show that 16% of male students strongly agreed, 75% agreed and 9% neither agreed or disagreed that the It's Electrifying, iTunes U Course compared to previous Science units, was a more effective way of learning.



Gender Comparisons

The results show that a staggering 91% of male students as opposed to 66% of female students either strongly agreed or agreed that the iTunes U Course compared to previous Science units, was a more effective way of learning. These statistics show a 25% difference in gender responses regarding this question.

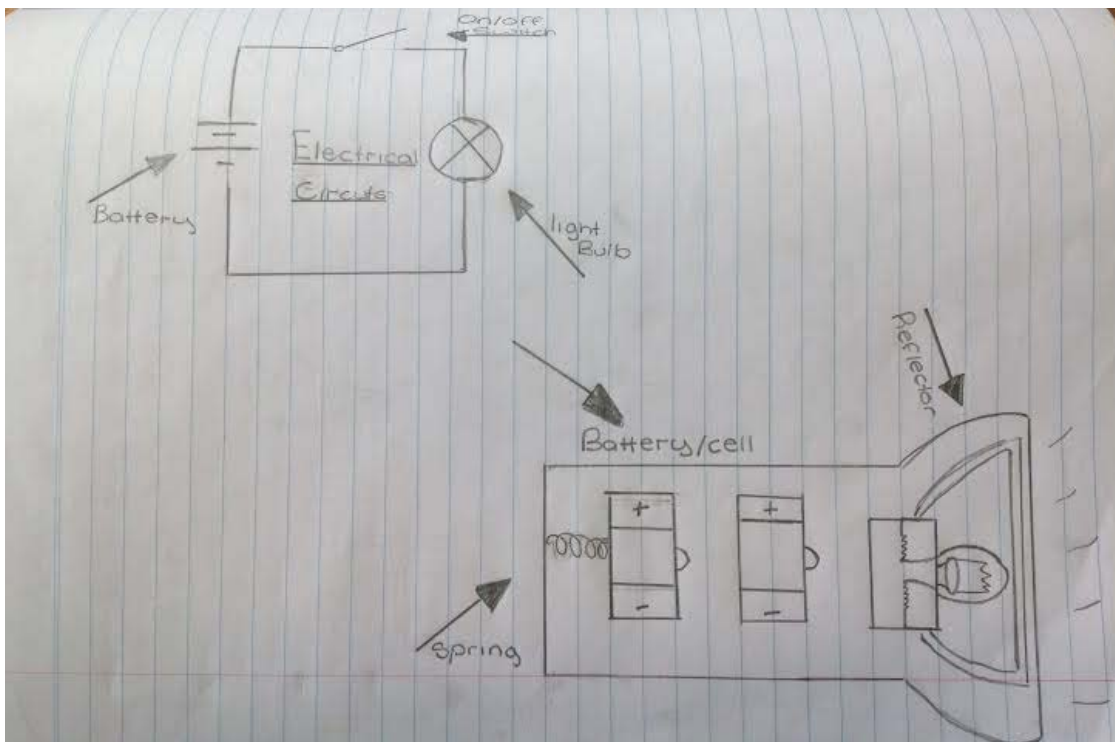
The results also show that only 9% of male students neither agreed or disagreed compared to 25% of female students. Furthermore, none of the male students disagreed whereas 9% of female students did disagree.

The vast differences between male and female responses shows that it is important for teachers to understand what the female students disliked and how the course can be improved to suit their learning styles and needs.

INVESTIGATION

Discuss with your teacher/class mates what you already know about how light bulbs work. Watch the two clips that are attached. You may need to watch them more than once. Take notes in your Science exercise book. These notes should be fairly detailed and provide you with a significant understanding of how light bulbs work.

Work Samples



HOW A LIGHTBULB WORKS

1. FIRSTLY, YOU TURN ON THE LIGHT TO SEND AN ELECTRIC CURRENT THROUGH THE BULB.
2. DUE TO THIS, THE WIRE TUNG-STEN INSIDE THE LIGHTBULB HEATS TO 2000°C, MEANING THAT THE WIRE GLOWS WHITE. (TUNG-STEN IS ONE OF THE FEW WIRES THAT DOES NOT BURN AT THIS HEAT).
IF THERE WAS NOT A GLASS COVER THE TUNG-STEN WOULD REACT TO THE OXYGEN AND BURN. INSIDE THE GLASS IS A NON-REACTIVE GAS CALLED ARGON WHICH STOPS THAT FROM HAPPENING.



Limitations

There were several limitations to this action research study. These limitations may have an impact on the data collected from student and teacher surveys as well as how the results of this data collected was interpreted.

The “It’s Electrifying” unit was the first Science and Technology unit taught for the school year commencing in 2014. Hence, this factor proves to be a limitation as teachers could not compare their students’ learning and motivation levels in this unit to a previous Science and Technology unit that they had taught their students. Instead, teachers assessed their students’ learning by analysing their pre and post assessment tasks results. It is fair to say that teachers could not compare their students’ learning and motivation levels in the “It’s Electrifying” Science and Technology unit to other Key Learning Areas such as English, Mathematics and Human Society and It’s Environment, as students are provided with technology and choices in terms of learning tasks to complete in these Key Learning Areas.

In the student survey, students had to rate the effectiveness, in terms of learning, of the “It’s Electrifying” Science and Technology unit to a Science and Technology unit they learnt in 2013 . Approximately fifty percent of the students involved in the survey, were in Year Four in 2013, and approximately the other half of students were in Year Five. Hence, half the students were in Stage Two and the other half in Stage Three. This creates several limitations to the action research project. The first limitation is that approximately fifty percent of the students surveyed were taught by teachers who are not part of the action research project. Thus, the teachers involved in this survey are somewhat unfamiliar with how half of the students were taught Science and Technology last year. Although efforts were made by all teachers involved in this study to learn about how the students were taught Science and Technology in 2013, by reading the Stage Two Science and Technology 2013 programs, engaging in professional dialogue with the 2013 teachers and talking with the students involved, these teachers were not physically there last year teaching these units.

The second limitation in regards to the student survey question about rating the effectiveness of the “It’s Electrifying” Science and Technology unit by comparing it to a Science and Technology unit they learnt in 2013, is that the students are

responding to this question differently. As the Year Five students are comparing the It's Electrifying" unit to a Stage Two unit and the Year Six students are comparing the It's Electrifying" unit to a Stage Three unit. Furthermore, there are two students who were enrolled at this school in 2014, thus they are comparing the It's Electrifying" unit to an unknown unit and program.

The administering of the surveys may be a limitation as they were administered to the students by four different teachers. There was no guidelines for the teachers to follow in regards to how to administer the surveys. Thus, the information teachers shared with their students about the survey and action research project, may have varied. This could have resulted in students interpreting the survey questions differently and thus responding differently.

For the selection surveys, the students were divided by gender and academic ability. The teachers involved in selecting students for the survey, agreed to have male and female students that represented the three academic ability levels; gifted, core and ESL. However, the teachers did not discuss what level within these three academic ability levels should be chosen for the survey. As a result, this has led to different levels within each category of students. E.g. mildly and highly gifted students have been included in the survey.

The fact that iTunes U is a modern educational tool has proven to be a limitation in terms of researching the effectiveness of using iTunes U in school environments, as there is a scarce amount of published research studies regarding iTunes U in classroom available. More so, there is an even more limiting amount of credible articles available about the use of the Padagogy Wheel in classrooms.

These limitations must be taken into account when reading and analysing this article. However, it is important to note that despite these limitations, the data gathered from this study should definitely not be overlooked. As nothing is more powerful than listening to the voices of students, when researching whether or not a learning tool, which in this case is the iTunes U and Padagogy Wheel, is an effective tool for learning.

Conclusion

The process of Action Research has broadened our understanding of how students can become responsible for their own learning. The use of iTunes U alongside the Pedagogy wheel, has allowed students to have choice and ignite interest in learning with the Primary Connections: Physical Sciences - It's Electrifying unit.

Overall, the key findings discovered across all students surveyed, they agreed that content delivered by the iTunes U course was a more effective way of learning compared to previous Science and Technology units.

These results have sparked conversation among Kindergarten to Year 6 teachers in creating courses for each Stage, not only Stage Three. In terms of future research, the idea of collaborating with other schools and delivering content through an iTunes U course is something each stage could investigate and execute.

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