# **Ready, Set, Jump** An Interactive eBook Designed to Awaken the Aspirations of Primary School Students

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Keywords: Aspirations, Awakening, Career Paths, Digital Literacy, eBook, Hyperlinks, Literacy, Low Socioeconomic Backgrounds, Motivation, MyVoice, Photovoice, Storytelling.

Abstract: The Commonwealth government and the university sector have acknowledged the low participation rate of students from low socio-economic status (SES) backgrounds in post-school education and training. Various strategies and approaches have been developed over time to increase the number of students from this group participating in tertiary education, with varied success. The purpose of this paper is to discuss the development of an educational electronic book (eBook) which is being used as a tool in the My Tertiary Education Day (*MyTED*) program. The program encourages primary aged students to consider tertiary education opportunities through the use of the eBook titled "Ready, Set, Jump". By leveraging the positive learning outcomes that can be achieved through the interaction with multimedia teaching content combined with a compelling story and an appealing design, the *MyTED* eBook encourages students to think about their aspirations. During the *MyTED* program the ways in which an eBook containing a story about aspirations can encourage primary school students to aspire to participate in tertiary education is investigated. The eBook encourages children to reflect critically on their aspirations, work individually and collectively on interactive activities, critique a series of videos and develop an affinity towards digital literacy.

# **1 INTRODUCTION**

"What do you want to do when you grow up?" We all remember this question but do we remember the answer that we gave when we were between eight and ten years old? The answer is very important as it will inevitably inform our future and probably reappear somewhere during our career pathway. This concept is explored in a program we called My Tertiary Education Day (MyTED) which has been specifically designed for this age group. MyTED encourages primary aged students to consider tertiary education opportunities through the use of an interactive electronic book (eBook). The students' parents are also included in all aspects of the program; they play a significant role in guiding and informing the aspirations of their children. During the MyTED program we investigated the ways in which an eBook containing a story about aspirations can encourage primary school students to aspire to participate in tertiary education.

*MyTED* contains three phases of which the second phase is designed to awaken the aspirations

of participants. Students are encouraged to wish and dream about anything that they would like to happen in their future. It doesn't necessarily need to be a career goal that is wished for; it can be a personal goal or a sporting achievement for example. This second phase we initially called the capacity building phase but after further discussion we chose to borrow the term awakening from the language of Indigenous Australians to name this phase the awakening aspirations phase. The eBook sits within the awakening aspirations phase and because of its interactive immersive nature it plays an important role in encouraging students to consider tertiary education options. By being designed to align with the Australian Curriculum the eBook assists with the development of language, literature and literacy skills in Year 4 students.

## **2** LITERATURE REVIEW

The literature suggests that it is between eight and ten years of age that those children begin to gain

ISBN: 978-989-758-107-6

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Ready, Set, Jump - An Interactive eBook Designed to Awaken the Aspirations of Primary School Students.

DOI: 10.5220/0005405201850192 In Proceedings of the 7th International Conference on Computer Supported Education (CSEDU-2015), pages 185-192

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insight into their own aspirations and capabilities. These insights are guided by interactions with family and members of the wider community (Lee 2012, p.115). Bandura et al. (2001) claim that the choices made by children during the formative periods of development shape the course of their future lives. Such choices determine which aspects of potentialities people cultivate, and which they leave undeveloped. Primary aged students should be exposed to a myriad of options and possible pathways they can take to cultivate their potentialities. In an effort to inform, guide and encourage students to reach their potential, programs should be put in place to awaken the aspirations of young people at an early age. According to Gale &Tranter (2011) interventions to encourage students to consider their aspirations aimed at younger students in primary school are more effective than ones aimed at traditional groups such as those in Year 10 onwards. The literature indicates the prime developmental time to begin discussions about aspirations is between the ages of eight and ten years of age.

Aspirations are a hope or ambition of achieving something and are stimulated by exposing children to different environments or facilitating activities that enhance their cognitive development (Lee 2012). Devlin & McKay (2011) affirm that the aspirations of students from low socio-economic status (LSES) backgrounds are often lower than those of traditional students (Devlin and McKay 2011 p.3). They also state that they can lack confidence and self-esteem affecting their overall sense of 'belonging' in higher education and their choices about seeking support (David *et al.* 2010; Murphy 2009; Christie et al. 2008; Charlesworth 2004).

In addressing the issues identified in the literature it can be assumed that aspirations, confidence, self esteem and self efficacy in children aged 8 to 10 years who are in their formative period need to be stimulated and supported. Therefore, with this in mind, it was decided to focus the MyTED project on areas and schools with a higher proportion of students that come from low socioeconomic backgrounds. However, rather than developing a program that focuses entirely on those particular students we decided to create an integrated curriculum. An integrated curriculum provides the opportunity for all students to bring to the learning environment varying resources in the cognitive, linguistic, knowledge and cultural domains. They then need to be guided to "develop the critical and communicative skills and conceptual repertoires that will enable them to deal with academic tasks" (Warren 2002 p. 87). Developing a program that fosters ambitions for all children is strongly supported by Sommerville (2013) who states "it is the right of every child to receive an education that promotes their individual learning path". This inclusive practice emphasises the uniqueness of each child's experience, potentialities, aspirations, learning and development.

The current literature and outcomes of recent studies indicate that targeted programs aimed at younger students in primary school are more efficacious, because by the time students reach high school their aspirations are likely to have been established. The purpose of the *MyTED* project is to awaken the aspirations of primary school aged children and their parents from LSES backgrounds and to build on these foundations into the middle years of schooling. A tool to deliver the project in an innovative and student centred way needed to be found and built. From early on in the project the idea was to use an electronic book to address complex pedagogical strategies to stimulate the students thinking about their aspirations.

#### Why an eBook?

An eBook was chosen, because a major component of the *MyTED* project is to increase literacy, in particular digital and written literacy. Researchers such as McLean (2013) believe that it is important to use digital media formats, such as an eBook to teach literacy to primary school students.

Electronic books are one form of technology that allows young children and struggling readers to enjoy books independently due to electronic features (Moody 2010). They provide additional opportunities for students to read and explore as they develop their literacy skills. Electronic books are defined as an electronic form of a book with features similar to those of a traditional print book including pages that "turn," and digital features that can assist the reader such as word pronunciations, text highlighting, text to speech options, and hypermedia (e.g., video, animations, and sound) (Horney and Anderson- Inman 1999; Korat and Shamir 2004). Students who are beginning to learn to read or have reading difficulties use eBooks in preference to a traditional printed book. This is due to the digital supports (McKenna, Reinking, Labbo and Kieffer 1999), pictures, cues and read aloud options that enhance comprehension. Teachers are more and more using eBooks with students who require the motivation of digital media effects to become engaged in reading. Engaged students may better attend to a reading task by pointing to pictures and

engaging in discussion about the book (McWilliam et al. 2003). A number of studies highlight benefits of eBooks on reading engagement when compared to traditional books (De Jong and Bus 2002, 2003; Fisch et al. 2002; Moody et al. in press; Talley et al. 1997). De Jong (2003 p147) argues that multimedia modes for picture storybooks offer various ways of supporting story understanding and other facets of literacy.

The literature supports the notion that multimedia tools, such as eBooks are ideal for delivering teaching and learning content to the young learners in a more immersive way compared to printed learning material. Multimedia tools make use of dynamic visuals and sound effects, starting and restarting the oral reading of the text, printed text that brightens or changes colour or size while the text is narrated.. De Jong (2003 p 148) found "evidence that feelings, mood and character actions, elicited by filmic depth, sounds and voices, improve the ability to make inferences about story events". Many young children have already had experiences with eBooks and the use of digital devices such as iPads where they can record sound, take pictures and videos. Moody (2010 p23) mentions that electronic books are nowadays widely used in early childhood classrooms in an effort to encourage engagement in storybooks while promoting emergent literacy development.

The literature has supported our understanding of the value of eBooks for literacy development of early learners; however the following overarching question remains. In what ways does an eBook containing a story about aspirations encourage primary school students to aspire to participate in tertiary education?

In undertaking this enquiry we were guided by questions such as:

- How does the eBook encourage children to think about their ambitions?
- How does the eBook and its contents support the engagement with the *MyTED* story and theme?
- In what ways did the interactive worksheets work for the Year 4 students?
- Was the content and design suitable for the defined audience?
- In what ways can the eBook be improved?

In an effort to answer these questions the decision was made to develop a program that facilitates an eBook for Year 4 students aged eight years to ten years, their parents and primary school teachers..

# **3** METHODOLOGY

The MyTED program utilised a design-based research methodology as this approach allowed for the carrying out of both design and testing in the context of a real-life settings (Barab et. al 2005 p.91). Although normally considered to be a methodology primarily associated with educational practice, the iterative nature of design-based educational research aligns directly with the working methods used extensively in both creative arts practice and throughout the design professions. The use of an educational, design-based research methodology allowed us to create an initial eBook application, which was used as a test vehicle. The outcomes from this testing were used to improve the application in an iterative process as is typically done in most design related research.

To gain a better understanding of how teachers, students and parents are responding to the design and functionality of the MyTED eBook, the researchers relied primarily on the gathering and analysis of both quantitative and qualitative data, which in turn determined the evolving technical structure of the eBook story, structure and design. Students, teachers and parents interacted with the eBook during the broader MyTED program. Throughout the program and during the testing of the eBook the students were encouraged to think about their aspirations for their future. The effectiveness of the eBook is measured by investigating the student's knowledge, reactions and experiences using four different methods that included:

- Oral assessment through the use of interviews with students and staff before and after engaging with the eBook.
- Questionnaires at the end of the program.
- Confidential feedback from teachers based on classroom observations.
- Observation in the field was enhanced through video recording how students and teachers interacted with the eBook and by documenting a range of associated activities.

In particular, teacher and student feedback and interviews later proved to be a valuable source of evidence that clarified many of the activities and interactions that were evident in videotaped field recordings

## 4 THE eBook

The eBook was designed to support the literacy component of the MyTED program. It sat within phase two, the awakening aspirations phase along with a number of other capacity building elements that encouraged students to dream and to think about their aspirations. The story was designed to help students recognise the wishes and dreams of others, such as those of the main character Edwina, and to apply this understanding to oneself. We designed and developed an electronic book, which blends the benefits of multimedia elements, such as hyperlinks, audio and video content, flexible text size and nonlinear structure. We also included interactive work sheets and participatory research activities such as Photovoice and MyVoice which stimulated the thoughts of the students and parents to consider their aspirations and career pathways. The practical development of the first trial

The practical development of the first trial version of the *MyTED* eBook was based on a paper version of the eBook. It was used in a preliminary study to identify a suitable back-story and a logical unit plan and lesson sequence that aligned with the Australian Curriculum learning area of English. The eBook prototype was tested in 2013 with 85 Year 4 primary school students from two schools. Researchers went into the classrooms and taught the lessons to the students with the classroom teacher also present. Parents were included at another session that took place after school hours. A further two hundred children took part in the second iteration of the *MyTED* program in 2014.

For the second iteration the participating students were typically between 7 and 10 years of age and were drawn from seven Year 4 classes from schools in different regions throughout Queensland, Australia. The primary aim of the *MyTED* eBook was to encourage students to think about their aspirations and future career pathways. However, its purpose was twofold as it was designed to improve literacy, reading, comprehension and digital literacy. To support these aims the eBook had a suitable back-story, an appealing design, and a relevant mix of multimedia features. The lesson plans were detailed and were designed with pedagogical practices that are relevant to the age group.

#### 4.1 The Story

In 2013 a story about a secret agent named Billy Bunting was developed but did not resonated with students, they found it to be too confusing. What the students did like and commented upon were the native animals such as the kookaburra and the kangaroo that were smart and exuded a sense of wisdom. Inspired by the student feedback, the researchers developed a new story that had an orphaned young kangaroo at the centre of the narration. We called the protagonist of the story Edwina (Figure 1). A nickname for Edwina can be Ted, which reflected the name of the program. The University Campus where the study takes place is a nature reserve with a resident mob of Eastern Grey kangaroos. Edwina's story prepared the children for a visit and tour of the University later in the *MyTED* program. The purpose of the campus visit was to expose the students to a tertiary education facility at an early age.





The main story is of struggle and how to overcome adversity with knowledge, curiosity and the development of aspirations. It is an open-ended story that leads to the introduction of the in-school delivery of the MyTED program by University staff, Technical and Further Education in Australia (TAFE) staff or primary school teachers. Throughout the story the reader is prompted by questions that promote deeper thinking and hypertext links that further his or her understanding. Both questions and hypertext links have been used as a tool to teach the children about the Australian wildlife, to think about emotions and feelings and to explain Aboriginal terminologies. Some of the questions stimulated a reflection of the readers' schooling experiences. For example students were asked to reflect on their first day at school and how they felt on that day. Sound was used throughout the eBook to identify the calling noises that Australian native animals use and to promote a higher level of engagement with the story. The illustrations first shown to students in the paper prototype in 2013 received a positive reaction from the students as they thought that they were very appealing and attractive. It was decided to apply the same illustration style to the new story in the 2014 eBook. Part of the story

was that *Edwina* the kangaroo finally fulfils her dream and is given a chance to attend her first day at school. On this day Edwina and her classmates discussed the possible meanings of an oil painting they had been shown. The oil painting is located in the library of the University they visited. The painting had no defined back-story and it is was up to the imagination of the viewer to make up his or her own story for the picture (Figure 2). The teachers depicted in the illustration look and dress like the actual visitors from the University; the authors of this paper. This activity provided students with a link between Edwina's story and the campus visit and encouraged students to further consider their aspirations.



Figure 2: Old Love by Peter Hudson.

## 4.2 The Design

The eBook was created in Adobe InDesign and saved into Adobe Acrobat Interactive PDF format. The title page of the eBook shows the main character, Edwina, smiling towards the audience while hopping happily from the left to the right through a lush green landscape (Figure 3). The title "*MyTED*: READY, SET, JUMP" was placed on the top left hand side and the *MyTED* logo on the bottom left corner. The title and cover image evoke curiosity and a happy feeling that invites the students to go further into the eBook and start reading the Edwina story.



Figure 3: Ready, Set, Jump title page.

It was decided to create the eBook as a Portable Document Format (PDF) file because of its computer platform independency. It was decided to use a tree-structured sidebar navigation that is visible from the beginning and can be customised by the reader from a pure text based index to an image based thumbnail system (Figure 4).



Figure 4: Left Side Bar Navigation.

Another navigation system is located on each of the 29 pages of the eBook including the cover page. The system consists of a back and forward arrow shaped button plus a button that represents the book index. The index items are hyperlinks that can take the reader directly to the desired book chapters or lesson plans. Throughout the 29 pages of the complete eBook the frame colours change from green to earth coloured orange to purple depending on the topic and activities of the *MyTED* program. This assists the students to navigate and recognise the relevant book content and activities quicker. It also helps students that are highly visual learners such as those with autistic spectrum disorders to find their way through the book (Devine 2014).

In 2013 a smaller group of students was shown a range of story aspects using different typefaces. One of the typefaces the students liked the best was Rotis Sans-Serif Light pt 20 for paragraphs and Rotis Sans-Serif Bold pt 24 for headings. Rotis Sans-Serif was designed by Otl Aicher in an attempt at maximum legibility through a highly unified yet varied typeface family (Frederich 1998). Legibility was key when designing the MyTED eBook to support young readers that struggle with legibility issues. The goal was to make access to the text as easy as possible. Every first paragraph of the main story chapters starts with a green coloured Drop Cap that spans the first three lines of the paragraph. The drop caps are drawing attention and make it easier to find the beginning of each chapter. The word limit for each page of the main story is 150 words because

more text would overwhelm and disengage the young reader.

Multi-media features such as sound were used to teach children how to identify native animal calls. Videos play an important part in the makeup of the eBook. Seven video interviews with staff and students that had a very unusual pathway to study or work at university are shown on page 27. The children can click on an image thumbnail that shows the person interviewed or on a play arrow underneath the thumbnail to view the videos (Figure 5). The videos are up to a maximum of four minutes in length to not over-stress the users' attention span and keep them involved and interested in the topic. Once activated the videos open in a new browser window that can be closed after having watched the movie. This allowed the reader to go back to the video page and keep interacting with the eBook.



Figure 5: Video interviews page: Video thumbnails with player window to help simplify video playing.

In 2013 the researchers tested the video quality and duration with 85 students and the specific video style developed through montage worked well with the participants. It should be noted that students lost interest if the videos were longer than five minutes, if more than three videos were shown in one sequence and if the interviewee spoke using a monotone voice. Other features of the eBook include the interactive worksheets that can be filled in by students and the ability to interact with Edwina via email. Photographs can be emailed to Edwina who lives and works at the University. Edwina, assisted by the research team endeavoured to write back to the students with some feedback and comments. The second section of the eBook contains the lesson material that teachers and students require during the program. The lessons and worksheets are interactive and can be printed, saved or emailed. In summary, the MyTED eBook's design concept with all its

elements and the structure supports the content of the program and makes the interaction with the story, lesson plans and its activities more engaging for the young students.

#### 5 TESTING THE eBook

The testing and development of the *MvTED* eBook was done with the co-operation of the teachers and students from schools located in low socio-economic areas in South East and Central Queensland between January 2013 and September 2014. The first study group consisted of 85 primary school students and the second consisted of 211 primary school students all between the ages of 7 and 10 years. The study was divided into two parts with the first part being conducted in 2013. The students were asked questions about the story, the learning content and the eBook prototype, design and layout. The responses from the students helped the researchers to develop and customise the final eBook concept on the basis of the students' preferences. The requirements of the Australian Curriculum also informed the development of the eBook, in particular, the learning content.

The second part of the study was conducted in 2014. This second iteration of the MyTED program allowed the researchers to test the final eBook and to gain valuable feedback that would inform any further changes. The purpose of the second part of the study was for the eBook to be embedded into the MyTED program and to test it with students within the school setting. The students were asked to complete a feedback questionnaire at the end of the second part of the study.

## 5.1 Findings of the 2013 and 2014 Studies

The results of both test trials suggested that the idea behind the *MyTED* eBook was valid and that it was possible to design an educational eBook that engages Year 4 students in a program that awakens their aspirations. It also stimulated discussions about career pathways and was at the same time lots of fun as stated by the majority of students that took part in the MyTED program. The major difference between 2013 and 2014 was that in 2013 we tested a paper based prototype and not a full functional eBook. In 2014 there was a slight increase in the number of students that indicated they would consider tertiary education. That could be due to the different eBook formats but also could be contributed to reasons such as different student cohorts, teachers and exposure to discussions around aspirations at home. Students were able to identify the interactive elements of the book such as clickable hyperlinks highlighted in red, clickable buttons and in-text links that make the images change and bring up additional information. Navigating through the eBook posed no problems for the students. More than half of the students thought that it was easy to work with the worksheets. This required them to fill in text, insert photographs taken with an iPad during the Photovoice activities and to name and save the worksheets. Almost eighty percent of the participating students enjoyed taking photographs with an iPad. The photography included taking a 'selfie' and several other photographs that represented their aspirations for the future. Four of these photographs were placed into an aspirations pathway App (application software). The students enjoyed placing the selected photos into the App which was part of the eBook. Some comments from students included: "I like the activities that you picked for us", "It was lots of fun"; "Can we do it again in grade 5?" Another activity in the eBook required students to draw images of their aspirations instead of taking photographs. Surprisingly, 91% of students found this activity even more "fun" than taking the photographs using a digital device. Some students engaged with the activity so intently that they forgot about time and space. The following quotes illustrate how engaged students were with the process of drawing and reflecting on their aspirations and possible career pathways: "I liked drawing most"; "You can use your imagination"; "I drew a teacher because I really want to become a teacher"; "I like drawing and I want to tell people what I want to be"; "You can be more creative". The illustrations of the eBook also received positive feedback with over 90% of the children liking the illustrations, the style, the artwork and characters of the Edwina story. Fifty-eight percent of all students liked Edwina's story very much, thirty-five percent found the story "OK" and only five percent did not like the story at all. Two schools out of the six stood out as finding the story "just OK". Those schools are located within rural farming communities where kangaroos are seen as a pest that eats a lot of grass which could go to feed the cattle instead. Overall, the students would not like to have seen a different story in the eBook and were very happy to read about Edwina's journey. The majority related to her and became quite attached to the character which became clear when the students went to the

University. The first thing they wanted to see was Edwina and all of her kangaroo friends that live on the campus grounds. The researchers were asking if the students would like to see animations in the eBook. The literature is suggesting that animation is very popular with children aged 8 to 10 years due to the high level of entertainment they provide. Interestingly enough, only 61% of the 211 students surveyed thought that animations would be of benefit to the eBook. Surprisingly, when asked if they would like to see teaching games integrated into the eBook, 90% thought that this would be a great idea. The schools that participated in the research program were well equipped with computers and children play educational games on a regular basis. Therefore, it can be assumed that many students are already familiar with computer games and enjoy playing games.

Overall, students indicated there was a high level of pleasure associated with engaging with the MyTED eBook. To the authors, perhaps the two things that came across most strongly from both eBook trials in 2013 and 2014 was the enjoyment and pleasure of being outside away from the constraints of the classroom and taking photographs for the Photovoice activity. It was quite clear from both written student feedback and follow up discussions that working in groups on the eBook activities, implementing content into the work sheets and being away from the classroom were the major attractions of interacting with the eBook. Students were asked if they preferred the eBook over a conventional book and the majority answered YES because of the high level of interactive activities provided in the eBook. Important feedback provided by teachers and the parents of the students was that the interaction with the MyTED eBook started conversations amongst students and outside of school with their friends and families about aspirations that they otherwise would not have had.

# 6 LIMITATIONS AND FUTURE RESEARCH

The data and findings described derive from two studies over the past two years that were conducted only with Year 4 students. This was to ascertain the impact that the eBook had on awakening aspirations. It would have been desirable to have had a control group of students that had undergone the *MyTED* program without the use of the eBook. For this reason, it is suggested that further studies be

undertaken with control group classes from the same schools. The benefits associated with education using electronic books and multimedia delivery formats are well documented in the literature, but it would be very interesting, some years from now, to evaluate the effectiveness of the eBook, when students reach the age to enter tertiary education and who are in similar social and economic contexts. The question could be asked about what percentage of students had access to the eBook and entered the tertiary education versus students that did not have access to it.

#### CONCLUSIONS 7

The findings clearly demonstrate that the MyTED eBook supports the delivery of the MyTED program to Year 4 students. The multimedia format, the custom designed layout, illustrations, engaging story and learning activities embedded in the eBook clearly help to engage students in the program. The Lee, H., 2012. What do you want to do when you grow eBook also shows that individual and group tasks such as *Photovoice* and *MyVoice* can be designed to bring students together to engage in co-operative learning activities.

#### ACKNOWLEDGEMENTS

We would like to thank all of the Principals, parents, staff and students from the six participating schools who helped us in conducting the two studies in 2013 and 2014.

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