Engaging the digital natives in learning

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Introduction

Marc Prensky regularly reminds us that young people are generally far more comfortable and adept in new digital environments than adults (Prensky, 2001, 2004). Moreover, young people occupy and shape their world in ways unimaginable when their parents and teachers were the same age. Young people in the 21st century communicate, share, buy and sell, exchange, create, meet, collect, coordinate, evaluate, play games, learn, search, analyse, report, and socialise in very different ways than in the past. Prensky argues that if educators (usually the 'immigrants' in this new milieu) want to avoid becoming irrelevant, they need to have some understanding of the rapidly changing digital space their students (the digital 'natives') occupy. Prensky's writings highlight the fact that one of the biggest challenges teachers face in schools today is engaging students in learning. Too often teachers are using outdated tools and techniques in contexts which bear little relation in many cases to how their students live and learn outside of school.

Supporting student engagement in learning in the compulsory years of schooling has been a key driver of the work of The Le@rning Federation (TLF) since 2001. TLF, an initiative of the Australian state and territory, and New Zealand governments, is charged with producing online interactive multimedia curriculum materials, freely available, for students in the P–10 years. In the late 1990s it was recognised that although Australian and New Zealand schools were becoming well equipped with Information and Communication Technologies (ICT) including access to computers, software, peripherals and Internet connectivity, there was a huge gap in the availability of suitable content for teachers and students to use with ICT. Research demonstrating an identifiable link between the use of digital curriculum resources and increased student motivation, and that motivated students have better learning outcomes, has guided the work of the TLF.[i] Considerable investment has been made through the initiative to produce quality, educationally sound online materials which incorporate the possibilities the digital medium has to offer to support the work of teachers, and engage and motivate students.

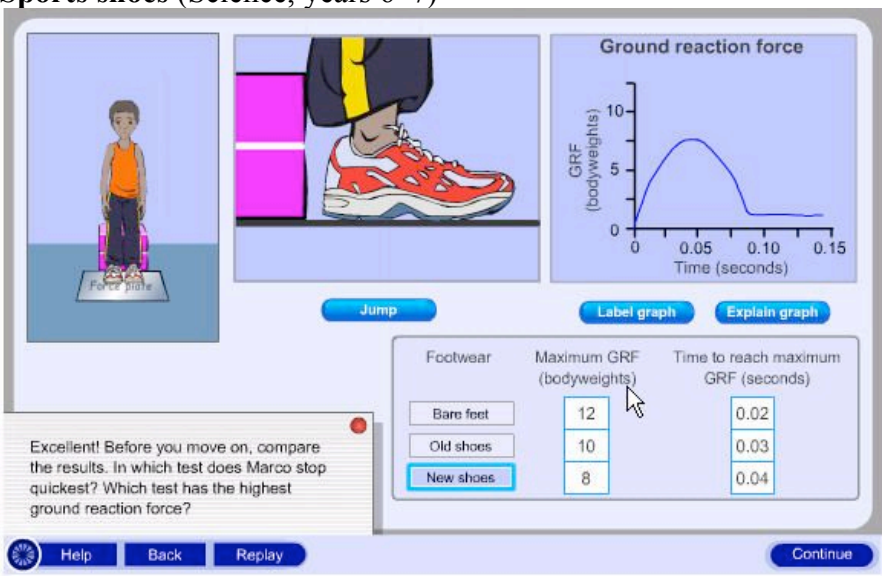
What does The Le@rning Federation content look like?

TLF interactive, online multimedia content is produced for six curriculum priority areas: Mathematics and numeracy, Literacy for students at risk (years 5–9), Studies of Australia, Languages other than English (Chinese, Japanese, Indonesian) and Innovation, enterprise and creativity. TLF online materials come in two formats: learning objects and digital resources. Digital resources are single items, consisting of moving image footage, a cartoon, speech, song, or photograph. These items have been licensed from Australian and New Zealand cultural institutions such as the National Film and Sound Archive of Australia, the National Archives and CSIRO. The items have been chosen and digitised for teachers and students to use however they choose.

Learning objects (the focus of this article) offer learning activities which explore concepts and skills, common to curriculum frameworks in Australia and New Zealand, and which teachers often have difficulty in teaching, and students learning. In contrast to the digital resources, learning objects are learning activities set in relevant contexts for young people and provide opportunities for exploration, interaction, visualisation, simulation, analysis and decision-making, in ways not normally possible in a standard classroom. Timely feedback about their understandings is given throughout in various multimodal formats.

Three examples of learning objects

Sports shoes (Science, years 6–7)

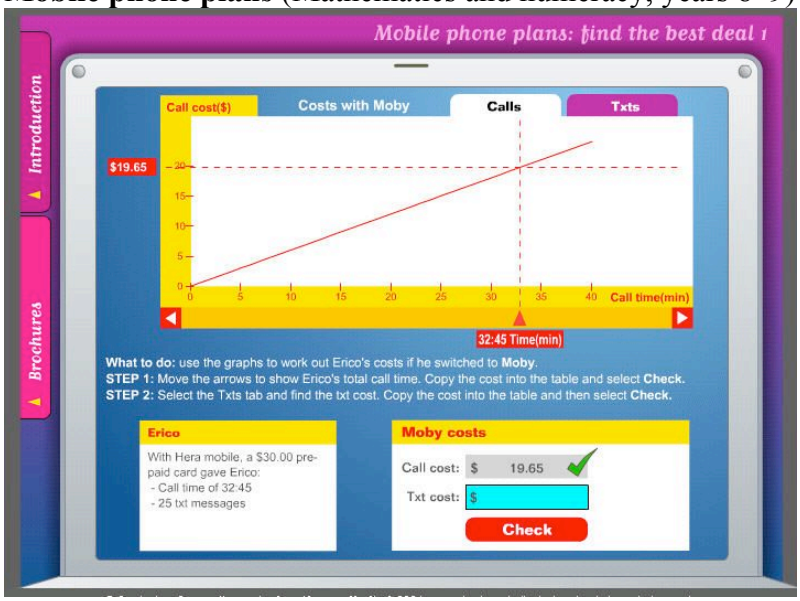


The sports shoes series of Science learning objects provide opportunities for students to investigate the concept of ground reaction force and how it can be measured and managed in the components of different types of sport shoes.

Dream machine (Literacy for students at risk, years 5–9)

The Dream machine learning objects allow students to recognise and use metaphors and similes to enhance the meaning and aesthetics of a description or recount. The context is an e-commerce website featuring an online catalogue for creating a personalized fantasy bike.

Mobile phone plans (Mathematics and numeracy, years 8–9)



The mobile phone plans series deals with some of the complexities of comparing mobile phone plans. Students are introduced to ways of using graphs to analyse and compare costs associated with different plans and must recommend the cheapest option.

How are teachers accessing and using TLF learning objects?

TLF commenced release of the online content in late 2003 and will continue to progressively release more content each quarter until mid-2006. Several implementation trials in various states and territories, and a major national report,[ii] are providing early indications as to how teachers are using the new content and how they and their students are responding to it. Teachers are gaining access to the learning objects in a range of ways. For example, from their state-wide digital repositories of online content such as in Queensland and Tasmania, from CD-ROMs distributed by their state (as in Victoria, New Zealand, WA), through state trials of Learning Management Systems (in ACT, South Australia, Northern Territory).[iii]

From these early trials, teachers clearly value the flexibility and pedagogical possibilities offered by the learning objects. They are choosing to integrate learning objects into variety of topics and curriculum strands and are doing so in an amazing diversity of ways. A good illustration of this is the popular 'Gold rush' learning object from the Studies of Australia project. The activity transplants students to the Ballarat goldfields in 1865, where their mission is to use limited financial

resources to select and buy food, shelter and other requirements related to either alluvial or shaft gold mining so they can complete a successful dig. Prices are given in pounds and shillings and a currency converter allows students to convert amounts to current dollar values. As they start their dig on the goldfields, students receive feedback advising whether or not their purchases have been appropriate. By completing the learning object, students recognise the challenges that miners faced finding gold, and the importance of the gold rush era in shaping Australia's population during the mid- to late 1800s.

Two teachers in a Victorian school used Gold rush just prior to a class excursion to Sovereign Hill, an open-air museum in Ballarat which authentically represents the life and times during the gold rush era. They comment:

> *Using the Gold rush learning object, together with structured worksheets for students to record progress through the object, was a highly effective preparation for the year 5–6 excursion to Sovereign Hill. High levels of prior knowledge gained from the learning object contributed to making the excursion a very valuable learning experience for our students.*
> Rachel Bugg and Annabel Harwood, Goulburn Valley Grammar School.

A Tasmanian teacher used Gold rush with her year 3/4 students as a precursor to student-designed research projects on the gold era in Australia. She first wanted to establish how much prior knowledge her students had about the topic. A class brainstorm revealed limited knowledge and many misconceptions. Students then did the learning object in pairs. The lesson ended with another class discussion where students shared all their new knowledge gained from the activity and suggested a huge variety of topics for further research. The teacher comments:

> *Gold rush worked well as a learning object because to complete it students have to put themselves in the shoes of a gold miner and get themselves equipped for the goldfields. They become gold miners solving the same problems that were actually solved on the goldfields. I was quite impressed with the students increased understandings and motivation over only approximately 45 mins.*
> Larissa Brenner, New Town Primary School, Hobart.

In another example, Gold Rush, although designed for the 3–6 years, was used by a year 12 Australian history teacher.

> *We used Gold rush to introduce the topic for Area of Study 1, Australian history. It served as a revision exercise which promoted wider discussion and note making. It was a fun way for a year 12 class to begin this topic. It led on to more detailed discussion of the economic and social impacts of the gold rushes. We referred several times back to the learning object as it showed vividly increase in consumer demand, etc.*
> Rosalind Jones, The Hamilton and Alexandra College, Victoria.

Literacy learning objects are also providing teachers with multimedia-rich interactive materials to use in a variety of interesting ways across curriculum areas, in interdisciplinary units and across year levels. In ‘Catch the thief’, another very popular learning object with three levels of difficulty, students consider a range of

oral, written and visual evidence as they predict who stole a valuable painting and support their claim with evidence. Teachers have used this learning object to develop skills of careful observation; as part of a Legal Studies topic on forensic evidence; to enable students to develop an appreciation for plot development, clever clues, red herrings and characterisation in English story writing; for problem-solving in Science; and as an introduction for senior Ancient History allowing students to see first hand that the detective, deductive and reasoning processes involved in solving a crime are similar to the skills used by an historian or archaeologist.

This Queensland teacher explains how she integrated Catch the thief into a range of learning activities for her year 3/4 class:

> *Catch the thief: level one was completed as a whole class activity using the data projector, group work, note taking skills and discussions where students had to clearly articulate oral arguments. Over the next two weeks students worked in pairs or small groups to 'solve' Catch the thief: level 2. This was during reading group time—as one of the reading activities—with comprehension skills and questions embedded in the activity. At the culmination of the unit when parents visited and shared with their child, groups worked together to 'solve' level 3. Parents were astonished at the critical literacy skills of their children who corrected their misassumptions. Later the Catch the thief series was used as an off-computer writing stimulus. Students were learning about different genres and were then given the option of Procedure; Exposition; Narrative; Explanation; Description or Recount with the instruction that they had to use Catch the thief as stimulus and accurately use the genre of their choice. Every child wrote a quality piece—accurately reflecting the experience of the learning object—whether it was a complete narrative about a robbery at a gallery or a list of instructions of how to 'play' Catch the thief on the computer.*
> Cathy Nash, Talara Primary College, Queensland.

These teachers who have taken the time to explore the suite of learning objects and have carefully selected and integrated them into their teaching and learning programs, obviously see their benefits to both themselves and their students.

Learning objects and engagement and motivation

Key findings from the national study involving teachers and students throughout Australia demonstrate that TLF interactive multimedia content is making a contribution to student engagement and motivation to learn (Freebody, 2005):

- Participants – teachers, parent home-tutors and students – consistently report that it motivates students to attend to and engage with tasks.
- Participants also consistently report that it enhances students' learning and interest in learning across a range of tasks. (Freebody, 2005 p.24)

So what is it about this type of content that it makes it so engaging and motivating for students? The student voice is quite clear on this. When the learning objects have been well-chosen for their year level and level of ability, students find them interesting and fun. They like the multimedia elements (sound, colour, graphics, animation), the interactivity and the fact that the timely feedback helps them develop

understanding. Some student responses to the question 'Do you think this learning object is a good idea'?

> *Yes because people can learn maths in pictures instead of always in numbers.* (Selina, year 4)
>
> *It's fun to play and it makes the learning part of it fun.* (Ryan, year 5)
>
> *Yes it is a good idea because it helps kids learn that it's not the worst thing in the world to get something wrong.* (Laura, year 5)
>
> *I think it's a great idea to have this because it's fun and will make kids want to learn because they can learn and see animations and things like that. It's not like just getting a sheet of paper and answering some questions. It will make kids finish there [sic] work so they can do this work.* (Matthew, year 6)
>
> *Yes, it teaches you at the same time as having fun.* (Braden, year 6)
>
> *I liked the maths game very much because I don't really like maths much but I enjoyed the game because I could learn in a different way and it was fun, colourful and easy to learn.* (Nicole, year 6)
>
> *Yes, because it was fun trying out different things, and to see which ones worked the best.* (Kate, year 9)
>
> *Yes because all teenagers like to use the computers in class and it teaches us things instead of sitting in boring classrooms.* (Dan, year 9)

These students are not just interested in the 'bells and whistles' made possible by the digital technology. They clearly articulate that learning matters and relish the opportunity to learn in a fun, interesting and challenging way in a medium they are familiar and comfortable with. Marc Prensky no doubt would wholeheartedly agree.

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[i] See 'Delivering the promise' (The Trinitas Report, 2000).

[ii] Reports from a range of implementation studies and from the 2005 National study by Peter Freebody can be found on The Learning Federation website: Research, trials and reports http://www.thelearningfederation.edu.au/tlf2/showMe.asp?nodeID=891

[iii] For up-to-date information about how to access TLF content in all education sectors in Australia and New Zealand, visit the TLF website www.thelearningfederation.edu.au

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