

# SCIENCE COURSES FOR NON-TRADITIONAL STUDENTS: DEVELOPMENT OF DIGITAL LITERACIES TO PROMOTE LEARNING, ENGAGEMENT AND ENCOURAGE CONTINUED STUDIES IN SCIENCE AT UNDERGRADUATE LEVEL

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## Background

A foundation studies science course is an important first step for education of non-traditional students who do not enter Universities by traditional pathways (e.g. ATAR entrance score). A science course; Science for Tertiary Learning as part of a wider program to enable students to undertake entry into an undergraduate degree provides an opportunity for these students to become a STEM graduate. It is noticed with changes to the national secondary curriculum that a pathway into scientific studies is daunting for students without the required ATAR, but the ability to continue to prepare students for STEM studies at tertiary level must ensure that programs provide scientific knowledge, in addition to a wider context of developing ever important digital literacies in this online world.

## Aims

To better prepare students without strong science foundations from secondary level to improve their digital literacies to be able to engage appropriately with scientific research. In addition, students were encouraged to progress further digital literacy skills by initially researching a short PPT presentation of an element of the periodic table using online information and then later develop greater detailed understanding with development of a formal written scientific report. A scientific report assessment using appropriate online journal articles and search strategies using library databases was employed.

## Description of intervention

Over a period of reflective practice from various feedback measures interventions were made with embedding digital literacies into the course, not as an add-on to scientific knowledge but as part of being a problem solver and supporting digital literacies. Initially, a short researched PPT about an element of the periodic table started students in the process of researching online for useful scientific information. Later, using a scientific report assessment piece students were taught how to employ better search strategies using the online library scientific database such as 'Science Direct,' 'PubMed' and 'Google Scholar' and to better evaluate academic resources and to encourage better digital literacies to further improve basic ICT skills. Online search strategies and critical analysis techniques of resources were identified and provided in class to develop digital literacies.

## Design and methods

At the conclusion of each semester over five years feedback was assessed and changes made and analysed. Feedback was collected both formally via course evaluation and informally with periodic unidentified feedback sheets in tutorial sessions.

## Results

Over a five year iteration of the course various inclusions such as; specific research and online library studies were employed in consultation with academic librarians. Students were able to navigate online journal articles via various scientific databases available to them via the Universities library resources and locate them with appropriate search strategies. Allowing non-traditional students to interact early

with the science specific discipline databases as students' progress to undergraduate level scientific studies they are able to better engage with online resources and felt that they were comfortable researching various scientific topics and could engage with complex research problems presented.

### **Conclusions**

Students had increased confidence in navigating online databases and developed better online search strategies. As students' progress through to undergraduate level science bachelors their knowledge of scientific information in discipline areas had begun and allowed for a smoother transition. By improving the understanding that students are digital natives (Prensky 2001) but are not always able to analyse scientific information and understand scientific data presented; that the understanding of appropriate systems, databases and analysis of online scientific information is are crucial skills to obtain.

### **References**

Prensky, M. (2001). Digital natives, digital immigrants part 1. *On the horizon*, 9(5), 1-6.

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