



Capture the King: Using Analogies to Teach Mathematics to Adults

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Abstract

The vicissitudes in higher education internationally has resulted in universities changing the focus of their undergraduate degrees, increasing enrolments and broadening participation. Non-traditional students, who would once have been excluded from university studies, are now being accepted. Given the vast social and educational diversities of these students, how do we, as educators, prepare them for undergraduate study?

Central Queensland University (CQU), Australia has a long tradition of accepting non-traditional students and has therefore provided services and courses to ensure that these students are prepared. Preparatory mathematics courses that follow adult learning principles can both provide content knowledge and increase confidence.

Students' confidence in their ability in mathematics is important; as confidence in their ability increases so do students' grades [1]. Over half of the students entering preparatory mathematics courses at CQU expressed a fear of mathematics [2]. Given that so many students have a fear of mathematics, reducing the fear and increasing confidence is therefore a vital part of teaching mathematics.

Analogies are an excellent way to teach mathematics to adults. They enable connections to be forged and assist in removing the fear caused by boring rote learning. Analogies enable mathematics concepts to be conveyed in a form that students can relate to, thus, increasing their understanding and confidence.

Using chess as an analogy in assisting students to understand the rearranging of an equation and especially the order in which to solve algebraic equations is extremely beneficial. Students are excited that mathematics can be viewed in a manner far removed from those tedious repetitious learning methods many learnt in school. Equation solving then becomes analogous to role playing as students metaphorically eliminate the 'guards' and capture the 'king'. Many students have commented "I always hated algebra in school if only they had taught it like this".

Anecdotal evidence suggests that students better relate to course content when analogies are used to simplify the concepts and provide contextual connections. It also suggests a reduction in cognitive overload and increased engagement.

References

- [1] Parsons, S., Croft, T., & Harrison M. (2009). Does students confidence in their ability in mathematics matter? *Teaching Mathematics & Its Applications*, 28(2), 53.
- [2] Adams, N., Dekkers, A., & Elliott, S. (2012). Supportive frameworks that increase mathematical knowledge and confidence in students enrolled in bridging mathematics courses. Refereed Paper presented at the ISTE International Conference, Kruger National Park, South Africa, 21 – 25 October, 2012.