

# THE IMPACT OF WEB-BASED UNDERGRADUATE MATHEMATICS TEACHING ON DEVELOPING ACADEMIC MATURITY

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After having presented web-based Calculus courses for a number of years (Engelbrecht and Harding, 2001(1), (2)), we investigate the impact of this medium on the student becoming more of an independent learner. In our investigation we use two approaches to investigate whether our model for web-based instruction contributes in the process of the student becoming academically more mature, a qualitative investigation as well as an empirical investigation in which a group of web students is compared to a control group of conventional students.

The cognitive structuralist approach of Jean Piaget and the maturity model of Douglas Heath (Henderson & Nathanson, 1984) are used to define *academic maturity*.

In the qualitative investigation, two focus group sessions were held where undergraduate students, having been exposed to a web-based Calculus course, discussed their experiences of studying via the web.

Students in the focus groups relate how the web environment helps them in developing into mature learners with regard to time management, self-reliance, responsibility, self-discipline and the ability to do collaborative work.

For the quantitative investigation we ran a questionnaire testing a number of dimensions of academic maturity with a group of web-students as well as with a control group of students with no web-teaching exposure. The dimensions where the web students outperform the control group are planning, time management, cooperation, confidence and in their preference for a learning environment. Results from other dimensions: locus of control, self-concept, curiosity, dedication and academic integrity are inconclusive.

## References

- Engelbrecht, J., Harding, A., (2001(1)). WWW Mathematics at the University of Pretoria: The Trial Run. *South African Journ. of Science*, 97[9/10], 368-370.
- Engelbrecht, J., Harding, A., (2001(2)). Internet Calculus: An Option? *Quaest. Math., Suppl 1*, 183-191.
- Henderson, E.S. & Nathanson, M.B., (1984). *Independent learning in higher education*, New Jersey, Englewood Cliffs.