

USING THE INTERNET IN HIGH SCHOOL MATHEMATICS

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Abstract

Whilst the technological, pedagogical and content knowledge (TPACK) model has been increasingly adopted for understanding teachers' use of technology, there have been many calls for greater discussion about the constituent constructs, their relationship with one another and the central TPACK. This paper analyses qualitatively the TPACK demonstrated by the teacher of a Year 11 class who used web-based simulated contexts and interactive web objects in a Mathematics Studies course. The findings indicate aspects of TPK relating to academic learning time and the transformational mode of the technology were not fully realised in this case study. The implications these has for teacher professional development are discussed.

Keywords: Classroom Teaching, Interactive Learning Environments, TPACK, Mathematics Education, Pedagogical Issues.

Abstrak

Sementara model tentang pengetahuan teknologi, pedagogi, dan konten (TPACK) telah semakin diadopsi untuk pemahaman guru tentang penggunaan teknologi, ada banyak masukan untuk diskusi yang lebih besar tentang konstruksi konstituen, hubungan mereka antara yang satu dengan yang lain dan TPACK pusat. Tulisan ini menganalisis secara kualitatif TPACK yang ditunjukkan oleh guru dari kelas 11 yang menggunakan konteks simulasi berbasis web dan objek web interaktif dalam program Pembelajaran Matematika. Temuan dalam penelitian ini, menunjukkan bahwa aspek TPK yang berkaitan dengan waktu belajar akademik dan mode transformasional teknologi tidak sepenuhnya diwujudkan dalam studi kasus ini. Implikasi nya terhadap pengembangan profesional guru, juga akan didiskusikan.

Kata Kunci: Pengajaran di Kelas, Suasana (Lingkungan) Pembelajaran Interaktif, TPACK, Pendidikan Matematika, Isu Pedagogi

With advances in technology such as increased bandwidth, wider Internet coverage and increasing number of stand-alone and web-based education related software, teachers are expected to be able to use the technology available in schools to improve teaching and engage students in learning. However ICT pedagogy in general, and web pedagogy in particular remains largely unaddressed in schools (Bain & Weston, 2012; Baskin & Williams, 2006). It is valid to say there still exists what Trend, Davis and Loveless (1999) termed a 'reality-rhetoric gap' when it comes to effective integration of ICT into mathematics learning situations. The rhetoric is that digital technology has potential to transform the way learning is being carried out but the reality is teachers are still grappling with how best to do so. Numerous studies undertaken to determine the ways ICT has been utilised in the classroom showed that ICTs were rarely used in new ways but showed characteristics of traditional approaches to learning (Smeets, 2005) or supplemented existing classroom practices (Hayes, 2007). Mathematics teachers need professional development to meaningfully integrate technology so that it can contribute