



## **Interactive Laboratories: Digital instructional media and the effectiveness of skills taught in a university geoscience laboratory**

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Information Communication Technologies (ICTs) such as online video are a new and evolving medium in modern education, with potential for digital instructional media to be designed as personalised learning tools. In order to assess the effectiveness of digital instructional media in geoscience laboratory lessons, tertiary students were provided with either traditional instructional media (“control treatment”) or digital instructional media (“test treatment”) to complete five soil description tasks (i.e. colour, texture, salinity, reaction/pH, manganese/organic matter) using samples of the three soil horizons of a local Podsol. Responses to a fifteen-question soil questionnaire were analysed according to their treatment group, as well as demographic factors and learning preferences. Results indicate a significant difference in soil skill applications between the two treatments ( $p=0.0087$ ), as participants without access to the digital instructional media (“control”) achieved a higher average questionnaire score. Demographic analysis was consistent in this trend, indicated by consistent results across gender, age and study experiences. Further analyses revealed that students’ learning styles and preferred instructional formats are strongly linked to the success of different instructional formats. Students with lower affinity for digital media performed best with traditional instructional media, whilst those with limited knowledge performed best using digital instructional media. With effective planning and well-developed content, digital instructional media has long-term potential to be effectively used in differentiated, autonomous learning in tertiary geoscience laboratories.