

Experimental assessment of technical learning outcomes using a text-book and interactive package in combinations: Addressing the numerical ecology problems of non-science students.

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Our chronic difficulties in teaching numerical ecology to undergraduate non-scientists stimulated us to design a Life Tables interactive package (IP). This material centres on a grey seal (*Halichoerus grypus*) population dataset and includes quizzes, games and videos. The material has greatly increased student interest and enjoyment in Life Tables but, when we asked if it may actually enhance learning outcome, we found little guidance in the literature. We addressed this issue experimentally, using the IP and a section of Smith and Smith's *Elements of Ecology* textbook (B). Material was presented in 2 consecutive 45-minute learning periods, using 4 treatments: B then B; B then IP; IP then B; and IP then IP. Subjects were tested using a multiple choice quiz before beginning, after 45 minutes, and after 90 minutes of study. As tested by ANOVA, immediate learning outcomes are comparable between the text and interactive package, but the increase in scores is greater with initial IP than initial B. Presenting IP before B is more effective than the reverse. In follow-up quizzes after 3 months, there was about 35% loss in test performance, and this was greater for IP-IP than for B-B. We conclude that the IP is much more motivating and fun but not necessarily more effective. Therefore it should be used as a stimulus for traditional text learning rather than on its own. The conclusions can possibly be extrapolated to a wide variety of technical learning situations. Final results in July 2005 may differ from the above.