Introducing StatHand: A Mobile Application Supporting Students' Statistical Decision Making

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Quantitative research methods are essential to the development of professional competence across a broad range of disciplines. They are also an area of weakness for many students. In particular, students are known to struggle with the skill of selecting quantitative analytical strategies appropriate for common research questions, hypotheses and data types, and this skill is not often practiced in class. Decision trees (or graphic organisers) are known to facilitate this decision making process, but extant trees have limitations. Furthermore, research indicates that students are more likely to access mobile-based material than content delivered via the web or face-to-face. It is within this context, and with funding from the Australian Government Office for Learning and Teaching, that we developed StatHand (see https://stathand.net), a cross-platform mobile application to designed to support students' statistical decision making. In this poster, we will briefly articulate the rationale behind StatHand, highlight ongoing research into its efficacy and provide delegates with hands-on experience with the application.

Keywords: Statistics; decision tree; graphic organizer; mobile application; iPad; iPhone; iOS.

Background

Decision trees (also commonly referred to as "graphic organisers") to guide statistical decision-making have been used for at least half a century (e.g., Siegel, 1956) and are now commonly included in statistics textbooks (see, for e.g., Allen, Bennett, & Heritage, 2014). Their popularity is supported by both theoretical and empirical work. Theoretically, they rest on the idea that knowledge must be organised or structured to be accessible from long-term memory. Decision trees provide this structure by explicitly highlighting the interconnectedness (and differentiation) between important statistical concepts (Schau & Mattern, 1997). Empirically, the work by Carlson and colleagues (Carlson, Protsman, & Tomaka, 2005; Protsman & Carlson, 2008) has demonstrated that decision trees can facilitate significantly faster and more accurate (by a multiple of three) statistical decision-making, compared to more traditional methods of statistical test selection (e.g., by searching through a familiar textbook).

StatHand

Despite their popularity, traditional, paper-based statistical decision-trees also have limitations. Furthermore, research indicates that contemporary students are more likely to access mobile based material than content delivered via the web or face-to-face (Stowell, 2011). It is within this context that we have developed StatHand, a free cross-platform mobile application designed to support students' statistical decision making (see https://stathand.net). This application, developed with the support of the Australian Government Office for Learning and Teaching, guides users through a series of simple, annotated questions to ultimately offer them the guidance necessary to conduct, interpret and report a statistical test suitable for their circumstances.

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