



## Strategies in undergraduate medical education: Web-based self-directed learning in genetics

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**Background** The practice of medicine requires advanced problem solving and self-directed learning abilities. However, the majority of medical teaching still uses didactic techniques. It has been shown that problem-based, self-directed learning is a more effective method of education, and these principles are being incorporated into medical school curricula worldwide. Web-based tools are also becoming increasingly appealing as technology progresses to foster student engagement. Online learning is also ideal for providing consistent curriculum content when a school has multiple campuses, or students undertaking clinical rotations at other sites. This is particularly important in medical genetics, where there is a wealth of information applicable to significantly sized patient populations, but a scarcity of learning tools for trainees. The field of genetics is relatively small and there are every few centres with enough professionals to constitute an adequate learning environment. Web-based tools can help eliminate these barriers by creating globally accessible learning resources. This study seeks to design and evaluate a series of web-based, self-directed case studies as a new teaching model.

**Objectives** Our goal in this study was to establish whether web-based self-directed case studies are more effective than traditional didactic teaching techniques in learning about common genetic disorders. **Methods** A pilot case study review phenylketonuria (PKU) was developed using SoftChalk™, a software program intended specifically for web-based teaching tool design. Along with written text, this case study includes images, interactive self-test questions, and links to references and other resources. The case was made available to medical students at Dalhousie University, who completed the case study as well as a feedback survey. **Conclusions** Of the respondents (n=13), all felt the case was an easy and enjoyable way to learn. The majority of respondents felt that the self-test and guiding questions were level-appropriate (92% and 100% respectively), although 69% would have also liked collaboration with a tutor or peers. All respondents agreed that independent learning is a vital skill in medical practice. The majority (83%) felt that they had better knowledge retention when encouraged to self-teach; however, only 63% felt that it was more effective than a lecture if delivered on its own.