

A Literature Review Evaluating the Use of Online Problem-Based Learning and Case-Based Learning Within Dental Education

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Abstract : Due to the Covid-19 pandemic alternative ways of delivering dental education were required. As a result, many institutions moved teaching online. The impact of this is poorly understood. Is online problem-based learning (PBL) and case-based learning (CBL) effective and is it suitable in the post-pandemic era? PBL and CBL are both types of interactive, group-based learning which are growing in popularity within many dental schools. PBL was first introduced in the 1960's and can be defined as learning which occurs from collaborative work to resolve a problem. Whereas CBL encourages learning from clinical cases, encourages application of knowledge and helps prepare learners for clinical practice. To evaluate the use of online PBL and CBL. A literature search was conducted using the CINAHL, Embase, PubMed and Web of Science databases. Literature was also identified from reference lists. Studies were only included from dental education. Seven suitable studies were identified. One of the studies found a high learner and facilitator satisfaction rate with online CBL. Interestingly one study found learners preferred CBL over PBL within an online format. A study also found, that within the context of distance learning, learners preferred a hybrid curriculum including PBL over a traditional approach. A further study pointed to the limitations of PBL within an online format, such as reduced interaction, potentially hindering the development of communication skills and the increased time and technology support required. An audience response system was also developed for use within CBL and had a high satisfaction rate. Interestingly one study found achievement of learning outcomes was correlated with the number of student and staff inputs within an online format. Whereas another study found the quantity of learner interactions were important to group performance, however the quantity of facilitator interactions was not. This review identified generally favourable evidence for the benefits of online PBL and CBL. However, there is limited high quality evidence evaluating these teaching methods within dental education and there appears to be limited evidence comparing online and face-to-face versions of these sessions. The importance of the quantity of learner interactions is evident, however the importance of the quantity of facilitator interactions appears to be questionable. An element to this may be down to the quality of interactions, rather than just quantity. Limitations of online learning regarding technological issues and time required for a session are also highlighted, however as learners and facilitators get familiar with online formats, these may become less of an issue. It is also important learners are encouraged to interact and communicate during these sessions, to allow for the development of communication skills. Interestingly CBL appeared to be preferred to PBL in an online format. This may reflect the simpler nature of CBL, however further research is required to explore this finding. Online CBL and PBL appear promising, however further research is required before online formats of these sessions are widely adopted in the post-pandemic era.

Keywords : case-based learning, online, problem-based learning, remote, virtual

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