Annotated Bibliography Problem-Based Learning

Note:

These materials are included in the CREATES Toolkit Co-creative Learning as an overview about useful literature for PBL implementation. For more information and additional educational tools, visit: http://europe-creates.eu

Problem-based Learning

Annotated Bibliography

The following ought to provide an overview about some useful literature for PBL implementation. Please keep in mind that a large majority of PBL research is conducted in the context of health sciences.

General Resources

Van Til, C., & van der Heijden, F. (2009). PBL study skills. *An Overview. Maastricht: Department of Educational Development and Research, Maastricht University*.

> The UM PBL handbook, often used for student and staff introductions, provides insights into the practical aspects of PBL in the classroom.

Moallem, M., Hung, W., & Dabbagh, N. (Eds.). (2019). *The Wiley handbook of problem-based learning*. Wiley Blackwell.

> The Wiley Handbook of Problem-Based Learning offers a great variety of texts ranging from historical foundations to effectiveness and instructional design, for example also with regards to the role of technology.

PBL Effectiveness

Dochy, F., Segers, M., Van den Bossche, P., & Gijbels, D. (2003). Effects of problem-based learning: A meta-analysis. *Learning and instruction*, *13*(5), 533-568.

> A meta-analysis that discusses the effects of PBL in tertiary education, establishing overall positive effects. Some moderating factors like level of expertise of the students, assessment types, retention period, and methodological were explored.

Gijbels, D., Dochy, F., Van den Bossche, P., & Segers, M. (2005). Effects of problem-based learning: A meta-analysis from the angle of assessment. *Review of educational research*, *75*(1), 27-61.

A meta-analysis looking into how assessment influences the reported effects of PBL based on an application of Sugrue's (1995) model of cognitive components of problem solving. The results suggest that the implications of assessment must be considered in examining the effects of problem-based learning and probably in all comparative education research.

Dolmans, D. H. (2019). How theory and design-based research can mature PBL practice and research. *Advances in Health Sciences Education*, *24*(5), 879-891.

The article argues that there is no one-fits-all approach in PBL and suggests continually adapting one's problems in the process.

Instructional Design and Assessment

EDLAB. (2016). The UM Handbook for Constructive Alignment. Retrieved from https://constructivealignment.maastrichtuniversity.nl/wp-content/uploads/2017/04/Constructive_Alignment_Handbook_EDLAB.pdf

The UM Handbook for Constructive Alignment addresses the importance of the alignment of an educational method, with the intended learning outcomes and assessment. Based on the theory of John Biggs, the UM handbook explores how to apply the theory of constructive alignment in a PBL context, with specific suggestions on a course, programme, and institutional level.

Van Der Vleuten, C. P., & Schuwirth, L. W. (2019). Assessment in the context of problem-based learning. *Advances in Health Sciences Education*, *24*(5), 903-914.

   The article discusses assessment in a PBL context and makes an argument for assessing student progress in a PBL context on a programme level. This builds on the theory of constructive alignment in a PBL context and takes it to the next step. The same authors have also published further articles about programmatic assessment and how to make it work.

Schmidt, H., & Moust, J. (2010). Designing problems. *Lessons from problem-based learning*, 31-45.

   The article uses a variety of examples and is a great resource for different types of problems for different purposes.

Hung, W. (2009). The 9-step problem design process for problem-based learning: Application of the 3C3R model. *Educational Research Review*, *4*(2), 118-141.

   The article offers an example of a problem design process along Hung's 3C3R model with a step by step description in the appendix.

Hung, W., Mehl, K., & Holen, J. B. (2013). The relationships between problem design and learning process in problem-based learning environments: Two cases. *The Asia-Pacific Education Researcher*, *22*(4), 635-645.

   Research on two PBL tasks, shedding some light on the importance of problem authenticity and how to foster genuine self-direction in students by using examples from practice quoting student experiences.