

Card-Based Learning Objective Design

A Collaborative Workshop to design Learning Objectives and Assessment Strategies

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The Learning Objective Design workshop introduces participants to a novel approach for designing learning experiences, in particular addressing some of the typical processes of Instructional and Curriculum Design such as the design of Learning Objectives and Assessment strategies. The authors will introduce a Learning Objective Design Board as a practical tool to make the process of defining Learning Objectives and Assessment Strategies for any type of educational experience easier, more creative, collaborative and even playful.

Keywords: learning objectives; collaborative design; card-based design; learning design; instructional design

Workshop Aims

The Learning Objective Design workshop introduces participants to a novel approach for designing learning experiences, in particular addressing some of typical processes of Instructional and Curriculum Design such as the design of Learning Objectives and Assessment strategies.

The workshop is based on a set of collaborative virtual boards and card decks that facilitate creative and playful collaboration and discussion between educators. The boards and the decks are based on the well-established revised *Bloom's Taxonomy* and borrows its structure from established Learning Design theories and methods (Conole 2005, Conole 2013, Hokanson et al. 2015). The widely known *Bloom's Taxonomy*, initially published in 1956 (Bloom 1956), provides an established framework for the categorization and description of educational goals or learning outcomes, often called learning objectives. In 2001, the *Revised Bloom's Taxonomy* was published by a group of researchers from fields of psychology, instruction and curriculum (Anderson & Krathwohl 2001), which is the only revision accredited with widespread acceptance (Forehand 2010). The revised taxonomy introduced verbs and gerunds to emphasize the dynamic nature of learning. As a result, the more granular and action-oriented taxonomy found wide adoption in learning objective design (Kennedy 2006). As a powerful framework, it is used to construct and articulate learning outcomes, that support both educators and learners to understand the pedagogical interchange within their learning environment and enable teachers to "plan and deliver appropriate instruction", "design valid assessment tasks and strategies" and "ensure that instruction and assessment are aligned with the objectives" (Armstrong 2010). Especially, the action-verbs and focus on learning as a process allow learning objectives to be defined with a learner centric approach, a concept especially relevant in active and problem-based learning and other contemporary modes of structuring learning (Grunert et al. 2008, Perkins 2016, Perkins 2019).

The boards and cards designed for the workshop break down the Revised Bloom's Taxonomy concepts and terminology into modular components that could be individually manipulated and combined in different forms, translate complex frameworks into card-decks or board games as a way of bridging the gap between theory and practice (Tahir & Wang 2020).

It utilises a collaborative methodology based on cards that have been identified as effective by scholars as artefacts to be used within design practice (Deng et al. 2014, Mora et al. 2017, Lucero et al. 2016, Roy & Warren 2019). Research in the field of learning design is increasingly recognizing the potential of participatory



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design and co-design practices in education and educational research as a methodological approach to support the definition of goals or pedagogical experience as well as involving different stakeholders in the design process (DiSalvo et al. 2017). In particular, the participatory dimensions of telling through use of storyboards, cards, sticky-notes or voting and making through creating mock-ups, prototypes or models seems suited to fast-paced collaborative workshops as those presented before, thus warranting the use of storyboards and card decks in the Viewpoints (Nicol 2012) workshop or the ABC Learning Design method (Young & Perovich 2016).

On these premises the Learning Objective Design workshop is aimed at fostering collaboration and co-creation practices between designers, educators from any discipline, and anyone tasked with designing educational content or programs, ranging from workshops, seminars to entire courses in school or university, in the tradition of collaborative instructional and learning design workshops.

The workshop is most relevant in context of the conference track 5 “Co-creation of Interdisciplinary Design Educations” due to its focus on fostering collaborative practices between designers and educators from different disciplines and backgrounds, enabling a process of multidisciplinary co-creation. The methodology adopted in the workshop itself draws upon multiple lines of practices, ranging from instructional design, learning design, card-based methods and collaborative design for education.

Workshop Outline

The workshop will be held in a virtual configuration, focussing on remote participation and is open to anyone interested or actively engaged in learning design or instructional design practices. No pre-existing experience in learning objective design is required to participate. Yet, even for experienced learning designers the new methodological approach may provide inspiring insights. The workshop will take 60 minutes including theoretical introduction, practical exercises and discussion. The workshop is structured as follows:

- Introductory Presentation and Theoretical Background (15 Minutes)
- Presentation of the Learning Objective Design Board in Miro (10 minutes)
- Practical Exercises in small working groups (15 minutes)
- Group presentations and discussion (15 minutes)
- Wrap up (5 minutes)

The introductory presentation will present the research project and the authors as well as the theoretical backdrop behind the approach. A brief introduction to Bloom’s Taxonomy as an established theory to articulate learning outcomes is presented. Then methodological inspiration derived from participatory design and card-based design is introduced alongside a demonstration of the Learning Objective Design Deck and its primary function. Then participants will be invited to the collaborative whiteboard solution Miro to collaboratively design exemplary learning objective and assessment strategies for an educational course of their choosing by using the canvas provided in the Learning Objective Design Board (figure 1).

All the groups will rejoin afterwards to share and reflect upon results. An interactive discussion will be moderated by the presenters to collect feedback, reflections and actions points to develop this approach further and understand if and how it could be adopted by participant in their practice.

Workshop Minimum and Maximum Number of Participants

The workshop should have a minimum number of 4 active participants, to enable groups discussion during the practical part of the workshop. More participants would be divided into subgroups for the practical parts of the workshop to ensure productive collaboration. Based on the virtual workspace and the prepared canvas, the workshop can host a maximum number of 50 participants, divided in 10 groups. The workshop will be held in a virtual configuration, using Miro as a digital whiteboard solution and a video conference tool (e.g. ZOOM or any other solution that provides breakout rooms). Beyond the video conferencing tool, no prior registration for any software is required. Access to the collaborative canvas will be provided with the interactive whiteboard solution MIRO, no prior installation is required. To take full advantage of the practical part of the workshop, participants should join the workshop on a desktop computer and have a modern browser installed on the device. Joining from mobile phones or tablet may limit the ability to interactively collaborate on the whiteboard.

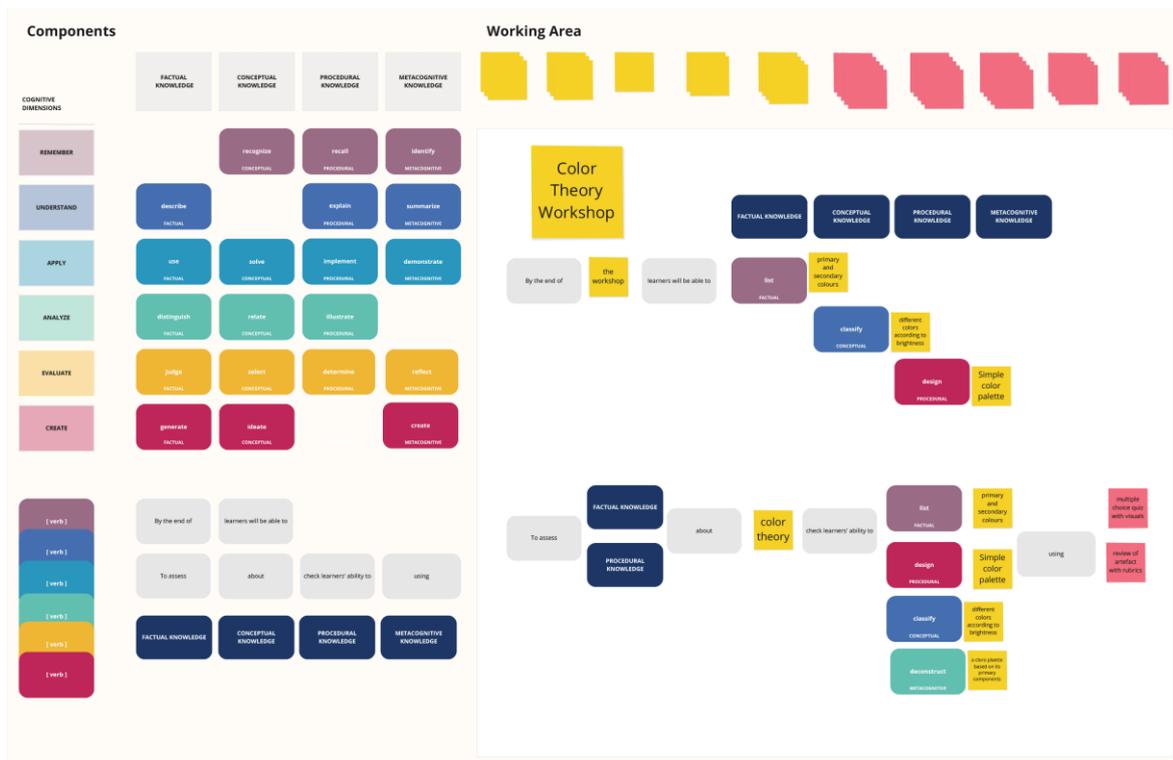


Figure 1. Learning Objective Design Board in Miro

Workshop Outcomes

Participants will benefit from a brief presentation of the current state of academic research for learning experiences and curriculum design and be introduced to a novel approach for designing learning objectives and assessment strategies, building on the Revised Bloom's Taxonomy. The technology-mediated and collaborative process presented in the workshop can be adapted and applied in the participant's practice if desired through the provision of template canvases and boards as a take away. The templates will be provided on Miroverse and can be used with a free Miro account.

The authors gain insights on the user experience design of the Learning Objective Design Deck and its transition within a digital collaboration platform that is intended for further improvements of the tool. Participants can also contribute to further developments in the discussion or provide feedback via an online questionnaire that is integrated in the Learning Objective Design Board to rate the user experience, the process of designing learning objectives and assessment strategies as well as provide qualitative feedback for the authors to consider.

Insight gained from practical workshops inform future research of the authors to increase the quality of the user experience and solidify the method while extended its functionality towards conceptual alignment of learning outcomes, assessment and learning activities as well as the design of consistent and coherent learning experiences, ranging from individual learning activities to overall courses and study programs.

References

- Anderson, L. and Krathwohl, D. (2001). *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. Longman: New York, NY, USA.
- Armstrong, P. (2010). Bloom's Taxonomy. Vanderbilt University Center for Teaching. Retrieved April 10, 2021 from <https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/>
- Beetham, H. (2007). An approach to learning activity design, In H. Beetham, & R. Sharpe (eds.), *Rethinking Pedagogy for a Digital Age: Designing and delivering e-learning* (pp. 26–40). London: Routledge.
- Bloom, B.S. (1956). *Taxonomy of Educational Objectives, Handbook: The Cognitive Domain*. New York: David McKay.
- Conole, G., & Fill, K. (2005). A learning design toolkit to create pedagogically effective learning activities, *Journal of Interactive Media in Education*, 2005, No. 1.
- Conole, G. (2013). *Designing for learning in an open world*. Springer: New York, NY, USA.

- Deng, Y., Antle, A.N., Neustaedter, C. (2014). Tango cards: A card-based design tool for informing the design of tangible learning games. In *Proceedings of the DIS '14: Designing Interactive Systems Conference 2014*, Vancouver, BC, Canada, 695–704. <https://doi.org/10.1145/2598510.2598601>.
- DiSalvo, B., Yip, J., Bonsignore, E., & DiSalvo, C. (2017). *Participatory design for learning: Perspectives from practice and research*. T Routledge: New York, NY, USA.
- Forehand, M., (2010). Bloom's Taxonomy. In M. Orey, ed. *Emerging Perspectives on Learning, Teaching, and Technology*. Global Text Project: Zurich, Switzerland. 41–47. Retrieved April 2, 2012 from <http://epltt.coe.uga.edu/>.
- Grunert O'Brien, J., Millis, B.J., & Cohen, M.W. (2008). *The course syllabus: A learning-centered approach* (2nd ed.). Jossey-Bass: San Francisco, CA, USA.
- Hokanson, B., Clinton, G., & Tracey, M. (2015) *Design of Learning Experience; Creating the Future of Educational Technology*. Springer: New York, NY, USA.
- Kennedy, D. (2006). *Writing and using learning outcomes: a practical guide*. University College Cork. Cork, Ireland.
- Laurillard, D. (2012) *Teaching as a Design Science: Building Pedagogical Patterns for Learning and Technology*, New York, NY: Routledge.
- Lucero, A., Dalsgaard, P., Halskov, K., Buur, J. (2016). Designing with cards. In Markopoulos P., Martens JB., Malins J., Coninx K., Liapis A. (eds.). *Collaboration in Creative Design*; Springer: Cham, Switzerland, 75–95. https://doi.org/10.1007/978-3-319-29155-0_5
- Mora, S., Gianni, F., Divitini, M. (2017). Tiles: A card-based ideation toolkit for the internet of things. In *Proceedings of the DIS '17: Designing Interactive Systems Conference 2017*, Edinburgh, UK, 587–598. <https://doi.org/10.1145/3064663.3064699>.
- Nicol, D. (2012). *Transformational change in teaching and learning: Recasting the educational discourse. Evaluation of the Viewpoints Project at the University of Ulster*. Retrieved April 10, 2021 from <https://www.reap.ac.uk/TheoryPractice/Principles.aspx>.
- Perkins, D. (2016). *Using Project-Based Learning To Flip Bloom's Taxonomy For Deeper Learning*. Retrieved April 10, 2021 from <https://www.teachthought.com/technology/using-project-based-learning-flip-blooms-taxonomy-deeper-learning/>.
- Perkins, D. (2019). *8 Steps For Teaching Through Project-Based Learning*. Retrieved April 10, 2021 from <https://www.teachthought.com/technology/8-basic-steps-project-based-learning-get-started/>
- Roy, R., & Warren, J. P. (2019). Card-based design tools: A review and analysis of 155 card decks for designers and designing. *Design Studies*, 63, 125-154. <https://doi.org/10.1145/3375462.3375476>.
- Tahir, R. & Wang, A.I. (2020). Transforming a Theoretical Framework to Design Cards: LEAGUE Ideation Toolkit for Game-Based Learning Design. *Sustainability*, 12(20), 8487. <https://doi.org/10.3390/su12208487>.
- Young, C., & Perović, N. (2016). Rapid and creative course design: as easy as ABC. *Procedia - Social and Behavioral Sciences*, 228, pp. 390-395.

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