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Call for Manuscripts: Special Issue: Tinkering in Technology-Rich Design Contexts

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The Interdisciplinary Journal of Problem-based Learning

CALL FOR MANUSCRIPTS

Special Issue: Tinkering in Technology-Rich Design Contexts to be published in Fall 2018

Edited by Mete Akcaoglu & Ugur Kale

Tinkering is a playful and iterative approach to solve problems through thinking, contemplating, and experimenting with given objects, tasks, or ideas (Martinez & Stager, 2013). Guided by imagination and curiosity, tinkerers take risks, play with their own ideas, decide what to do next, and create prototypes through an iterative process of creating and solving problems. Tinkering is central to making, and today's accessible powerful tools can facilitate tinkering by allowing learners to be the designers and makers of things and projects. Through 3-D printers, microcomputing, or computational tools, learners can create various systems such as simulations, games, or robotics. At the heart of tinkering is the *will* and *skill* to be able to design successful systems, and solve problems with or without the help of tools.

Various design, inquiry, or problem-based models and pedagogical approaches to learning can be embedded in technology-rich tinkering contexts. These contexts can be ideal platforms to integrate and teach important cognitive skills such as computational thinking or problem solving. Engagement (i.e., student interest and value) naturally built into tinkering contexts also helps with student perseverance and success.

Following in the footsteps of Papert's constructionism (1980), recently, makerspaces—also called STEM or STEAM labs or studios—are increasingly finding a place in schools (Becker et al., 2017). These physical contexts are functioning as testbeds for teachers and students to design and create artifacts by inquiring, creating, and solving problems. Learning and teaching initiatives promoting making, computational thinking, and tinkering that are offered in these contexts face two issues. First, such initiatives are uncommon in the current public school education system, where competing curriculum priorities and lack of funds are main constraints (Google & Gallup, 2016; Guzdial, 2016). Second, there are only a few teacher educational programs preparing preservice teachers to promote such learning (Yadav, Stephenson, & Hong, 2017). Although there are efforts all across the spectrum, there seems to be a lack of visibility of these efforts to guide, unify, and possibly help replicate future practice and research.

With this special issue, our goal is to bring together educators and researchers to share their experiences around issues related to inquiry, problem solving, and design in these technology-rich tinkering contexts. More specifically, we are looking for problem-based, project-based, or inquiry-based models and approaches to teaching and learning by tinkering in technology-rich design contexts in K–12, preservice, and inservice teacher education settings.

Topics include but are not limited to:

- Research on technology-rich design contexts that follow PBL and inquiry approaches
- Tinkering, design, computational thinking, and problem-solving
- Exploration of PBL and inquiry strategies in STEM or Makerspace contexts
- Tools that support PBL/inquiry and tinkering
- Issues and challenges in design, implementation, and research of PBL/inquiry strategies in technology-rich design contexts

Important Dates

- Full paper submission: November 30, 2017
- Reviews back to authors: March 15, 2018
- Author revisions: April 16, 2018
- Final papers: June 15, 2018
- Publication date: September 15, 2018

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Submission Types

- Research Papers
- Conceptual Papers
- Voices from the Field (see http://docs.lib.purdue.edu/ijpbl/vol7/iss1/12/)

Manuscript Guidelines

- Maximum word count: 5,000 excluding references and tables
- The suggested proposal/paper structure (for research papers):
  - Introduction (with clear statement of the research problem)
  - Literature review
  - Research questions
  - Methods (detailed description of the PBL model used, research design, instruments, validity/reliability, or appropriate analogues)
  - Data analysis
  - Results or conclusions
  - Discussion (including limitations and future work)
- Conceptual papers should be structured around key themes salient to any topic or any combination of the topics identified in this call and should have clear focus providing practical or theoretical implications for future efforts.

Submissions

Proposals and full paper submissions will *only* be accepted through the IJPBL Electronic Submission System at http://ijpbl.org.

- Please include "2018 Special Issue:" prior to your title in the submission system and in your proposal/full manuscript.
- Remove any identifying information from your document for review.

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References

Becker, A. S., Cummins, M., Davis, A., Freeman, A., Giesinger, H. C., & Ananthanarayanan, V. (2017). *NMC Horizon Report: 2017 Higher Education Edition*. Austin, TX: The New Media Consortium.

Google & Gallup (2016). *Trends in the state of computer science in U.S. K–12 Schools*. Retrieved from http://goo.gl/j291E0

Guzdial, M. (2016, February 24). State of the states: Progress toward CS for All. *Communications of the ACM*. Retrieved from https://cacm.acm.org/blogs/blog-cacm/198790-state-of-the-states-progress-toward-cs-for-all/fulltext

Papert, S. (1980). *Mindstorms: Children, computers, and powerful ideas*. New York: Basic Books..

Martinez, S. L., & Stager, G. S. (2013). *Invent to learn: Making, tinkering, and engineering in the classroom*. Torrance, CA: Constructing Modern Knowledge Press.

Yadav, A., Stephenson, C., & Hong, H. (2017). Computational thinking for teacher education. *Communications of the ACM*, *60*(4), 55–62. https://doi.org/10.1145/2994591