Call for Papers
Learning and Instruction
Special Issue on Lasting Learning

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Special issue information:

Learning and Instruction is soliciting submissions for a special issue entitled “Toward Lasting Learning: Cognitive Mechanisms and Instructional Means to Maintain the Outcomes of Meaningful Learning.” In meaningful or generative learning (Ausubel, 1963; Wittrock, 2010), comprehension and application of knowledge is key. Consequently, instructional design research has a long history in investigating means that promote comprehension and transfer. In this history, instructional design research has put substantial emphasis on the acquisition or construction of the respective knowledge. A wealth of research has shown how learning tasks (e.g., generative learning tasks) and learning material (e.g., multimedia material) need to be designed to engage learners in meaningful learning activities and hence to promote comprehension and transfer performance (for recent overviews, see e.g., Brod, 2021; Dunlosky et al., 2013; Fiorella & Mayer, 2016).
By contrast, instructional means that are designed to contribute to *consolidating* or *maintaining* the acquired knowledge over the long term have received scarce attention. For instance, comprehensive interventions that are designed to maintain knowledge such as successive relearning (Bahrick, 1979), which have shown promising effects in promoting vocabulary-like factual knowledge, have widely been ignored in meaningful learning (see Rawson & Dunlosky, 2022). Retrieval practice, whose main function is the consolidation of (factual) knowledge (e.g., Agarwal et al., 2021; Carpenter et al., 2022), is often treated as an opponent rather than as a companion for generative learning tasks in promoting meaningful learning and hence potential synergistic effects of the two types of tasks have scarcely been addressed (e.g., Karpicke & Blunt, 2011; Lechuga et al., 2015; Roelle, Froese et al., 2022).

The promising technique of interleaving shows inconsistent effects in the few studies that used complex materials such as mathematical tasks or descriptive texts, but the underlying mechanisms and boundary conditions are not yet understood well (e.g., Brunmair & Richter, 2019). To comprehensively promote meaningful learning, there is thus important catching up to do with regard to maintaining the outcomes of meaningful learning.

The goal for this special issue is to serve as a vital resource on the topic of promoting lasting learning for those interested in this area of inquiry. We aim to *lay the groundworks for a comprehensive theoretical account* that could inform recommendations on how learning and instruction should be designed to create lasting knowledge. To achieve this goal, we call for papers that present empirical studies that explicitly test theoretical assumptions about the conditions and processes that make the outcomes of meaningful learning last and attend to how the respective processes can be instructionally supported. The studies may refer to
different age levels and to diverse learning and instructional settings, from laboratory experiments to field studies. Key criteria for the fit of studies to the special issue, which are also reflected in the set of preliminary contributions to this special issue presented below, are:

- The studies need to focus on advancing our theoretical understanding of learning processes that support lasting learning (i.e., we do not seek studies that merely address whether interventions have lasting effects without attending to theoretical explanations)
- The studies need to focus on long-term learning (retention interval of at least one week; additional posttests with shorter intervals may of course be included additionally) and go beyond mere rote learning of factual knowledge (e.g., comprehension or transfer)
- The studies need to use educational materials that could in principle be part of authentic instruction (e.g., studies that use learning material, in which an artificial language or artificial rules are taught, are not suitable for the special issue)

**Preliminary contributions:**

1. *Julia Krauspe & Mirjam Ebersbach*

   University of Kassel, Germany

   **Title:** Combining Spacing and Worked Examples to Enhance Lasting Learning of Mathematics in Primary School

   **Brief description:** Fourth graders are first introduced to a new arithmetic procedure. Thereafter, they practice corresponding mathematics problems by pure problem solving or by
being provided additionally with worked examples. Practice takes place either on one day (i.e., massed) or is distributed across multiple days (i.e., spaced). The main hypothesis being tested is that worked examples promote meaningful processing, which, in turn, enhances the spacing effect. Accordingly, spacing the practice phases while being provided with worked examples should yield the largest benefit for lasting learning, as indicated by a better long-term retrieval of the arithmetic procedure.

2. Veronika Yan¹ & Faria Sana²

¹Athabasca University, Canada, ²The University of Texas at Austin, USA

**Title:** Pretesting Benefits in Classroom Contexts

**Brief description:** We examined the benefits of pretesting on long-term retention of lecture material in two undergraduate psychology courses. Students took weekly pretests on half of the to-be-taught concepts prior to several lectures. Results showed that pretesting led to better learning for the pretested concepts on end-of-week quizzes (Experiment 1; five-day retention interval) and midterm exams (Experiment 2; one to seven weeks retention interval).

3. Joel J. Katz & Melody Wiseheart

York University, Canada

**Title:** Memory for Highly Structured Material: Poetry, Melody, and the Spacing Effect

**Brief description:** In a pair of studies, we examine whether the spacing effect improves lasting learning of extended prose and a musical tune. Our results have implications for the role of cues in retrieval of structured verbal and non-verbal material.
4. Tamara van Gog & Gesa van den Broek

Utrecht University, The Netherlands

**Title:** Stepwise Presentation of Examples to Foster Retrieval Practice and Improve Lasting Learning

**Brief description:** We investigate if a novel way of inducing retrieval practice during example study, by means of stepwise presentation, improves retention and transfer on a one-week delayed test. Participants (Bachelor/Master students recruited on Prolific) are randomly assigned to 1) a no retrieval condition, studying pairs of regular examples, or 2) a retrieval condition, studying pairs of a regular and stepwise example, which is presented step-by-step with a few seconds delay in between the appearance of each next step during which students are encouraged to engage in a retrieval attempt.

5. Dan Corral & Shana Carpenter

Iowa State University, USA

**Title:** Learning Real-World, Complex Concepts Through Retrieval Practice Versus Re-study

**Brief description:** We explored whether retrieval practice aids retention and transfer of statistical hypothesis testing concepts. Participants first studied the concepts, and were then assigned to either retrieve the concepts from memory, complete a recognition test over the concepts, re-study the concepts again, or have no further exposure to the concepts. After this learning phase, participants completed a final test (1-week retention interval) that included verbatim definitions of the concepts, as well as questions that involved transferring and applying the concepts to new situations.
Title: Interleaved Practice in Undergraduate STEM Education: A Preregistered Randomized Controlled Trial

Brief description: This study investigates the effects of interleaving on concept learning and problem-solving skills in undergraduate science, technology, engineering, and math (STEM) courses. Students in biology, chemistry, economics, engineering, physics, and psychology courses receive four weeks of homework assignments, each interleaved or blocked by topic, then complete surprise retention and transfer tests after one week and one month.
Title: To ask or to answer? The effect of generating and answering self-generated versus provided questions on lasting learning

Brief description: Due to a lack of available practice questions, many students struggle to independently apply retrieval practice, one of the most effective learning strategies for long-term learning. This study aims to investigate whether answering self-generated questions would be as beneficial as answering provided questions compared to a restudy control condition. In three experiments, students read expository texts, generate conceptual questions, and practice retrieval with either their self-generated questions or with provided questions, receiving feedback on their answers. Learning effects will be measured on a 1-week delayed assessment, taking into account the quality of generated questions. Findings of this study can inform about the utility of letting students generate their own practice questions with respect to lasting learning.

8. Marina Klimovich & Tobias Richter
Department of Psychology IV, University of Würzburg, Germany

Title: Using Guided Interleaving to Foster Spelling Acquisition

Brief description: We report results from a classroom experiment with German third graders that examines the benefits of interleaving for spelling instruction. We also examine whether the effectiveness of interleaving can be increased by combining it with instructional support that helps students to engage in active comparison strategies (guided interleaving). A small-group spelling training will be developed that focuses on different spelling phenomena typically taught and acquired as part of the Grade 3 curriculum in Germany. Spelling rules are practiced with exercises that involve a blocked or interleaved presentation of words
exemplifying particular types of spelling, either with or without instructions and prompts to apply comparison strategies. Learning outcomes will be measured shortly after the training and after 8 weeks to gauge effects of guided interleaving on lasting learning.

9. Seokyoung Kim¹, Roman Abel¹, Detlev Leutner², Philipp Schmiemann², & Julian Roelle¹

¹Ruhr University Bochum, Germany ²University of Duisburg-Essen, Germany

Title: Enhancing Lasting Learning by Generative Drawing Through Integration of Retrieval Practice

Brief description: The present study aims to investigate how lasting learning by generative drawing can be enhanced through the integration of retrieval practice. The generative drawing is either implemented in the established pure open-book format, in which learners can access the expository text on whose basis they are to construct their drawings all the time, or in a closed-then-open-book format, in which learners first must generate as much of their drawings as possible without access to the text. Learning outcomes are assessed two and eight weeks after the learning phase.

All empirical contributions of the special issue will be discussed and situated by two commentaries, which will be provided by (1) Sean Kang (The University of Melbourne) and (2) Katharina Scheiter (University of Potsdam, Germany) and Alexander Renkl (University of Freiburg, Germany).

Manuscript submission information:
As an international, multi-disciplinary, peer-refereed journal, Learning and Instruction provides a platform for the publication of the most advanced scientific research in the areas of learning, development, instruction and teaching. This call for papers solicits high-quality proposals that will be evaluated in a highly competitive procedure. Interested authors are asked to submit (a) a manuscript title and an abstract of up to 1000 words (excluding references and tables), and (b) a short bio of authors (150 words maximum per author) on the title page to the journal’s submission platform (Editorial Manager®) and select the article type “VSI: Toward Lasting Learning Abstracts.” Please refer to the Guide for Authors to prepare the proposal. Both the Guide for Authors and the submission portal can be found on the journal homepage here: https://www.elsevier.com/journals/learning-and-instruction/0959-4752/guide-for-authors. Abstracts can be submitted as of now. Authors who are invited to submit full manuscripts can submit their manuscripts from August 1st, 2023.

For any inquiries about the appropriateness of contribution topics, please contact Julian Roelle at julian.roelle@ruhr-uni-bochum.de

- Deadline for proposal submission: November 30, 2023. Abstracts will be reviewed and selected authors will be invited to submit a full manuscript for consideration for inclusion in the special issue.

- Invitations to submit full manuscripts: December 22, 2023 (Abstracts that are submitted before the deadline of November 30, 2023, will likely receive decisions before this date).
Manuscript submission deadline: **June 30, 2024**. All submissions deemed suitable to be sent for peer review will be reviewed by at least two independent reviewers. Once your manuscript is accepted, it will go into production, and will be simultaneously published in the current regular issue and pulled into the online Special Issue. Articles from this Special Issue will appear in different regular issues of the journal, though they will be clearly marked and branded as Special Issue articles. Here is an example: https://www.sciencedirect.com/journal/learning-and-instruction/special-issue/10998HN52P0

**References:**


[https://doi.org/10.1007/s10648-021-09595-9](https://doi.org/10.1007/s10648-021-09595-9)


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