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EDITED AND REVIEWED BY
Clifford A. Shaffer,
Virginia Tech, United States

*CORRESPONDENCE
Irene-Angelica Chounta
✉ irene-angelica.chounta@uni-due.de

SPECIALTY SECTION
This article was submitted to
Digital Education,
a section of the journal
Frontiers in Education

RECEIVED 08 March 2023
ACCEPTED 13 March 2023
PUBLISHED 28 March 2023

CITATION
Chounta I-A, Hoppe HU, Nolte A and Spikol D
(2023) Editorial: Re-inventing project-based
learning: Hackathons, datathons, devcamps as
learning expeditions. *Front. Educ.* 8:1182264.
doi: 10.3389/educ.2023.1182264

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Editorial: Re-inventing project-based learning: Hackathons, datathons, devcamps as learning expeditions

Irene-Angelica Chounta^{1*}, H. Ulrich Hoppe², Alexander Nolte^{3,4}
and Daniel Spikol⁵

¹Department of Computer Science and Applied Cognitive Science, University of Duisburg-Essen, Duisburg, Germany, ²Rhein-Ruhr Institut für Angewandte System Innovation e.V. (RIAS) Institute, Duisburg, Germany, ³Institute of Computer Science, University of Tartu, Tartu, Estonia, ⁴Software and Societal Systems Department, Carnegie Mellon University, Pittsburgh, PA, United States, ⁵Department of Computer Science, University of Copenhagen, Copenhagen, Denmark

KEYWORDS

project-based learning (PBL), hackathons, digital learning, devcamps, datathons, maker spaces

Editorial on the Research Topic

Re-inventing project-based learning: Hackathons, datathons, devcamps as learning expeditions

Events like hackathons, maker events, game jams, and similar time-bounded events are a global phenomenon. They provide a space for people with different backgrounds and expertise to come together and work on projects that interest them (Falk et al., 2022). These events are usually centered around specific themes or challenges. They encourage participants to form teams and use their skills and creativity to develop innovative prototypes by choosing their own tools and approaches. During such events, teams typically have access to mentors to aid them in their projects.

While many of these events may not be specifically designed to promote learning, they can still offer valuable opportunities for participants to expand their knowledge. We can expect that these events are a rich source of “collateral learning” defined by Dewey (1938) as “the way of formation of enduring attitudes, of likes and dislikes.” For example, participants may learn about new tools and technologies (Huppenkothen et al., 2018), gain experience collaborating in a team (Mendes et al., 2022), or expand their knowledge related to the theme of an event (Affia et al., 2020). Additionally, these events can help participants expand their networks and connect with others in their field and beyond.

This Research Topic explores the potential of hackathons and hackathon-like events as impromptu learning opportunities. Such events share many characteristics with project-based learning, including a focus on practical, problem-solving activities and an emphasis on collaboration and creativity. Project-based learning (PBL) aims to teach students by engaging them in pursuing solutions to problems through investigation and production. In this sense, learning activities are driven by the assignment of projects that students are asked to carry out (Schneider et al., 2002). Usually, projects are complex tasks that involve students in design, problem-solving, decision-making, and resource management within a social context, i.e., working together with peers to achieve a common goal (Mergendoller and Thomas, 2005; Kokotsaki et al., 2016). An interesting characteristic of PBL is that the learning process and the final outcome cannot be fully predetermined. This requires students and teachers to continuously monitor, reflect, assess, and update their practice (Barron et al., 1998). Therefore, although not primarily devoted to learning, hackathons and similar events rely on similar principles. We envision this as an opportunity to define new types of project-oriented learning in technology-rich contexts (Chounta et al., 2017).

To situate modern educational approaches using hackathons as learning opportunities, it is helpful to identify best practices and approaches for incorporating educational objectives into these events. For example, organizers could provide resources and guidance on using specific tools or technologies or encourage participants to reflect on their learning throughout the event. Additionally, it may be useful to explore how these events can be integrated into existing educational programs or used to support specific learning objectives. For example, schools or universities could organize hackathons or maker events as part of a larger curriculum or as a way to engage students in specific areas of study.

To this end, we invited researchers and practitioners to submit theoretical, methodological, empirical, and technical contributions. After a rigorous peer-reviewing process, we accepted five papers that are presented on this Research Topic: One Methods article, three Curriculum, Instruction, and Pedagogy articles, and one Original Research article.

- In “Materializing the abstract: Understanding AI by game jamming,” Falk and Inie discussed the potential of game jam formats as a tool for learning about Artificial Intelligence (AI). The authors identify factors that advocate for game jams as appropriate formats for learning about AI and, based on their findings from interviews with AI experts, they provide recommendations for structuring and planning AI-focused game jams.
- In “Consider ‘HACKS’ when designing hackathon challenges: Hook, action, collaborative knowledge sharing,” Wallwey et al. proposed a framework that aims to support the development of interdisciplinary hackathon challenges, focusing on STEAM (Science, Technology, Engineering, Arts, and Math) and problem-based learning, with an emphasis on wicked problems.
- In “Employability competences through short-term intensive PBL-events in higher education,” Wyke et al. presented their experience from organizing a cross-institutional short-term event that focused on interdisciplinary, digital, problem-based learning activities. The authors discussed how such an event can support and promote the acquisition of employability competencies and consequently act as a transitional step between education and the future workplace.

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- In “Student experiences in a university preparatory programming course,” Spikol et al. explored the benefits of kickstart programming courses using development and boot camp approaches for incoming university students with the aim to support students self-efficacy and confidence.
- In “How do participants collaborate during an online hackathon? An empirical, quantitative study of communication traces,” Schulten et al. presented a mixed-methods analysis of communication data-traces of teams that worked during a 48-h hackathon event with the goal to study how individual hackathon participants communicate at scale during the event using technology.

These articles significantly contribute to understanding hackathons, maker events, game jams, and other time-bounded events as learning opportunities in various domains. Their findings also provide insights that can aid organizers and participants in preparing for and running successful events.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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