



Editorial: Pedagogical Practices That Promote Student Communication, Problem-Solving and Learning in a Digital Age

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Keywords: pedagogical practices, communication, problem-solving, digital, learning

Editorial on the Research Topic

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Being able to communicate effectively is widely regarded as one of the critical twenty-first Century skills for workplace success. However, many young people graduate from formal schooling with noticeable deficiencies in being able to demonstrate sound communication skills, including oral and written skills that will be communicated through a variety of digital tools and networks. Such difficulties often prevent young people from reaching their full potential in school, assigning them to a life of poor employment prospects and poverty. This Research Topic brings together a diverse range of international scholars to highlight the evidence that has emerged on those pedagogical practices that promote student communication skills and learning with a view to helping to ameliorate this decline. The emphasis in this Research Topic is on studies that have a strong evidence-base for the work that is presented, albeit across different contexts and subject domains. Teachers and educators need to be cognisant of how different pedagogies can be adapted or used creatively to promote student engagement and learning.

The first article in this Research Topic by Zheng et al. reports on an exploratory study that investigated 31 EFL teachers' perceptions of the implementation of collaborative writing in 13 Chinese tertiary institutions. While collaborative writing has been increasingly investigated in educational research, the authors argue that little is known about whether and how it is adopted as a pedagogical activity in classroom contexts. In this study, data were collected *via* interviews and teaching materials. The results indicated that while the teachers perceived collaborative writing as valuable and feasible, it was a practice that less than half used. Practical suggestions are provided for implementing collaborative writing in classroom contexts.

The second article by Topping focuses on how Digital Peer Assessment (PA) is becoming increasingly relevant as more educational establishments such as schools and higher education institutions are moving toward online or blended learning. This article outlines the purposes of PA, its effectiveness, and describes in general terms how to implement this approach to assessment, including the different types of hardware that can be used for different assessment purposes. Finally, the strengths and weakness of digital PA are summarized, highlighting how Digital PA can be used to enhance students' communication, problem-solving, and self-confidence.

The following article by Liu and Gillies examined the mediated-learning behaviors involved in the questions teachers ask during whole-class instruction in high schools in China. Five public lessons on different Research Topics were observed to ensure the diversification of

OPEN ACCESS

Edited and reviewed by:

Douglas F. Kauffman,
Medical University of the
Americas—Nevis, United States

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Specialty section:

This article was submitted to
Educational Psychology,
a section of the journal
Frontiers in Education

Received: 31 May 2022

Accepted: 14 June 2022

Published: 29 June 2022

Citation:

Gillies RM (2022) Editorial:
Pedagogical Practices That Promote
Student Communication,
Problem-Solving and Learning in a
Digital Age. *Front. Educ.* 7:957845.
doi: 10.3389/educ.2022.957845

teachers' questions. A conversation analytic approach was adopted to analyze the teachers' verbal interactions with students during whole-class teaching. Teachers' questions and students' responses were categorized as display questions or referential questions. The study found the interactions initiated by referential questions contain a wider variety mediated-learning behaviors likely to promote learning than display questions.

In the article, *Young Raw Matters Ambassadors: High School Students Act as Science Communicators*, Canino et al. argue that it is critically important for students to have well-developed communication skills and a positive mindset if they are to learn how to face new challenges linked to sustainable development. In this article that authors document the experiences of seven classes of teenagers as they participated in a variety of experiential learning activities and processes designed to develop their communication competencies and their awareness about sustainable development. The results suggest that these types of work-based experiences are highly motivational, lead to a better understanding of science, and help to create a shared vision of the importance of sustainability in utilizing finite raw resources.

Wang and Lin, in *Evaluating Factors Influencing Knowledge-Sharing Behavior of Students in Online Problem-Based Learning*, discuss the adoption of an online problem-based learning (OPBL) approach to nursing internship programs. Data were collected from 425 nursing students who studied at seven nursing colleges or medical universities in Taiwan. The authors found that when an OPBL was integrated with social identity theory and commitment-trust theory, social interaction and communication among students occurred which, in turn, facilitated the creation, sharing, and exchange of knowledge. The authors argued that social identification is a crucial antecedent of KSB with relationships playing a vital role in shaping the effects of interpersonal trust and relationship commitment (RC) on KSB during internship experiences.

Critical thinking is considered as one of the essential twenty-first Century skills that must be acquired by the citizens of modern society, and its relationship with blended learning has attracted much attention from researchers and practitioners. This study reports on students' perceptions of a blended learning environment where the pedagogical, social, and technical design was directed to fostering critical thinking. Data were collected via a questionnaire and interviews. Results revealed that the students generally held positive perceptions of the environment, and they believed that the blended learning environment could help promote their critical thinking in different ways.

In the following article, Pos and Reyes explore the reliability and factorial validity of an instrument they developed to assess responsible talk and its impact on cooperative classrooms. The authors aimed to develop an instrument which enables the evaluation of talk that maximizes student performance during different segments of interaction-interactivity throughout a learning sequence. Results show that the talk that students use has three purposes: to constitute an effective group for learning, to build knowledge and to verify its acquisition. The authors proposed that this study provides an initial diagnostic tool that aims to establish a causal relationship between the different types of interaction in the classroom and the academic performance of the students.

The final article in this Research Topic explores the challenges six primary teachers in Malaysia faced in embedding entrepreneurial elements or the ability to foresee and adapt to changes, into their mathematics curriculum. Data were collected via semi-structured interviews, observation, document analysis, and field notes. The findings indicated that the teachers' knowledge, teaching style, limited teaching experience and attitudes, and in-service courses and training were among the identified challenges that need to be addressed if these teachers were to be successful in applying entrepreneurial elements to their teaching of mathematics.

AUTHOR CONTRIBUTIONS

The author confirms being the sole contributor of this work and has approved it for publication.

Conflict of Interest: The author declares 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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