Editorial: Educational transformation: 21st century skills and challenges for higher education

Silvia F. Rivas[1]*, Ana B. Bernardo[2], Joana R. Casanova[3] and Carlos Saiz[1]

[1]Facultad Psicologia, Universidad de Salamanca, Salamanca, Spain, [2]Facultad de Psicología, Universidad de Oviedo, Oviedo, Spain, [3]Universiddad de Miño, Braga, Portugal

Editorial on the Research Topic
Educational transformation: 21st century skills and challenges for higher education

We live in an era of rapid transformation, driven by technology, globalization, and constant changes in labor and social dynamics. In this context, higher education is faced with a crucial challenge: preparing students with not only technical knowledge but also the skills necessary to adapt and thrive in an ever-evolving world.

Twenty-first-century skills—such as critical thinking, problem solving, effective communication (Halpern, 1998; Sternberg, 1985; Perkins and Salomon, 1989), digital literacy, and teamwork—have become essential components in the comprehensive training of future professionals. However, effectively integrating these skills into curricula requires rethinking traditional teaching approaches (Dwyer et al., 2014). Education must go beyond the mere transmission of information and embrace active, interdisciplinary, and innovative methodologies that foster meaningful learning and the development of transversal competencies.

Higher education institutions must take a leading role in educational transformation by updating their academic programs, incorporating technological tools, and strengthening formative experiences that equip students with the confidence and creativity needed to face labor market challenges.

In this regard, higher education must evolve to meet the new needs of students and society. In addition to imparting knowledge, institutions should focus on cultivating key competencies that help future professionals adapt to dynamic environments, enhance critical thinking, and promote autonomous learning.

This Research Topic of our journal brings together a collection of articles that address various challenges and opportunities in higher education and explore key topics that impact university education today. These topics include how community service learning can enhance literacy, the effects of flipped classrooms on teaching, and the relationship between academic performance and skill development for the digital age. Additionally, this Research Topic examines how the combination of in-person and online learning influences student autonomy and the effects of active learning methods on academic outcomes.

Furthermore, this Research Topic includes research on the cognitive and motivational factors that influence intentions to drop out of university, emergency remote teaching for English as a Foreign Language (EFL) students, and the connection between critical thinking, psychological wellbeing, and academic performance. These studies provide a comprehensive perspective on how higher education can adapt to the challenges of the 21st century by integrating innovative strategies that enhance student learning and engagement.

In line with these themes, the collection contains a wide array of articles that address educational transformation from multiple perspectives. It features studies on flipped classrooms in physiology, student wellbeing based on perceptions of the learning climate, and multimodal literacy through service-learning. Other articles explore dropout risk factors, digital and complexity-related skills, and university teacher identity. Additional contributions examine active learning methods across modalities, and the importance of self-regulated learning in blended contexts. Several studies expand our understanding of computing identity and 21st-century skill development across cultures. The volume also discusses the differences between emergency remote teaching and structured online learning, the implementation of STEAM pedagogies, and the implications of artificial intelligence in education—both as an institutional force and a classroom tool. Finally, the Research Topic explores gaps in skill assessment and presents models for curricular integration based on global experiences. Collectively, these 22 articles offer a comprehensive and multifaceted view of how higher education can—and must—evolve to meet present and future demands.

There is no doubt that higher education must act urgently to address the challenges of the 21st century by transforming its pedagogical approaches to effectively prepare students for a rapidly changing world. Seizing the opportunity to integrate key skills such as critical thinking, effective communication, and adaptability into curricula will not only enhance graduates' employability but also contribute to building a more dynamic and innovative society. The educational community must collaborate to develop programs that foster active and collaborative learning. In doing so, we not only ensure that our students are equipped to face future professional challenges, but we also strengthen the role of education as a driver of social and economic progress.

In conclusion, this *Frontiers* Research Topic, titled *"Higher Education and 21st Century Skills: Challenges and Opportunities,"* presents 22 articles that offer valuable insights into the discussed topics. It highlights the importance of examining the strengths and challenges identified in various studies related to the development of transversal skills in higher education. This volume aims to contribute to the academic debate and reinforce the role of research in shaping solutions to the current challenges of university education (Saiz and Rivas, 2023).

Author contributions

SR: Conceptualization, Writing – original draft, Writing – review & editing. AB: Writing – review & editing. JC: Writing – review & editing. CS: Writing – review & editing.

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