

TOWARDS A SUSTAINABLE SCHOOL CULTURE

Carmen Romero-García^{1*} , Olga Buzón-García² ,
Beatriz Amante García³ 

¹Universidad Internacional de La Rioja (Spain)

²Universidad de Sevilla (Spain)

³Projectes d'Enginyeria, Universitat Politècnica de Catalunya (Spain)

Corresponding author: mariadelcarmen.romero@unir.net

obuzon@us.es, beatriz.amante@upc.edu

Currently, we live in a continuously transforming society, which has led to the educational system facing changes and new challenges. It is necessary to change the previous models and didactic methodologies, which were markedly expository, and the memoristic learning of students, to incorporate profound innovations in the methods used in the training of students at all educational levels, where the student must be the main actor in their own education (Sharma, Mandot & Singh, 2023).

The learning needs of today's students, who must learn to live in a globalised, digitalised, intercultural, changing society that produces vast amounts of information, require different teaching methods from those used 20 years ago (Ermakova, 2020). In this sense, in recent decades, there has been a resurgence of pedagogical renewal centres in Spain, which aim to adapt the educational system to the needs of students by integrating methodologies and approaches focused on their personal, competential development and progress within the educational system (Beneyto, Carrete, Arregui & Domingo, 2023). These centres can be considered as catalysts of change that have significantly improved students' socio-emotional skills and academic performance through the implementation of innovative practices and resources adapted to the characteristics of the students (Aliaga, 2022).

This renewal not only focuses on the curricular content but also on the way in which teaching is delivered, always seeking greater inclusion and equity (Engel & Coll, 2022). In this regard, teaching and learning methodologies play a crucial role in the implementation of innovative and renewing processes in education. Therefore, didactic approaches should evolve to give greater prominence to the student and organise teaching based on the acquisition of skills necessary for the professional development of students, such as the ability to collaborate and work in teams, creativity, critical thinking, and digital literacy, among others. Ultimately, they should provide students with tools for autonomous and lifelong learning.

This methodological-didactic renewal requires the use of different models and active methodologies in the classroom that grant a fundamental role to students, such as Flipped Learning, collaborative learning, gamification, project-based learning, among others. Frequently, these methodologies are mediated by the use of various digital tools. Digital technologies applied to training and education offer a wide range of possibilities when designing educational activities in the teaching and learning processes, allowing for the representation of information, collaboration, and knowledge construction (Guerrero-Quinonez, Guagua & Barrera-Proano, 2023).

In the process of implementing active methodologies, the teacher plays a very relevant role in designing activities and selecting the appropriate digital tools that enhance the effectiveness of these methodologies for student learning. Continuous teacher training is essential to ensure the effective implementation of innovative methodologies and to adapt them to the specific context of the classroom, promoting deep and meaningful learning (Balladares-Burgos & Valverde-Berrocoso, 2022). AI tools can enhance innovative methodologies and

continuous assessment, improving the effectiveness of educational institutions and supporting the continuous training of teachers. Thus, AI becomes a crucial ally in pedagogical renewal and the promotion of sustainable education (Forero-Corba & Negre Bennasar, 2024). Teacher training is a determining factor in educational quality, as well-trained teachers can transform the learning experience. They must be equipped with the knowledge and tools necessary to adapt to the demands of an ever-evolving education.

These aspects are reflected in the 18 articles published by authors from different countries and institutions presented below:

Jordi Feu Gelis, Albert Torrent and Òscar Prieto-Flores in their work entitled “Pedagogical renewal today: Miscellanea” offer a general, critical and interdisciplinary view of current pedagogical renewal. They clarify the differences between the terms reform, renewal and innovation, showing some of the fundamental aspects that characterise the peculiarities of current pedagogical renewal.

Paulo Roberto Weingärtner Junior, Natalia Piedemonte Antoniassi, Vitor Ferreira Bindo and Guilherme Frederico Bernardo Lenz e Silva with their article “Self organizing maps (SOM) and statistical methods for describing the psychosocial profile of undergraduates students of engineering” analyze the characteristics of first year engineering students, in order to obtain a model that allows decisions to be made on the most appropriate teaching technique to meet the needs of the students and focus on improving their learning.

Nur Aini Khoo binti Ahmad Fuad Khoo, Nurdiana Yasmin Jamaluddin, Sharifah Osman and Achmad Buchori “Exploring the interaction between learning styles and mathematics anxiety among secondary school students: A correlational study in southern Malaysia” it shows that learning styles have an impact on mathematics anxiety and could help the students to improve their learning styles to minimize the level of anxiety towards mathematics.

Alicia Palacios Ortega, Virginia Pascual López and Daniel Moreno Mediavilla “Methodological design in the use of virtual simulations in Chemistry: A systematic review” through a theoretical study analyze how to apply the use of simulations in the teaching of chemistry in secondary schools, delving deeper into the way in which simulations are used from a methodological perspective, in order to improve the learning processes and results.

Ana de Castro-Calvo, Núria Carrete-Marín and Núria Simó-Gil, “Resignifying pedagogical renewal today: Pedagogical benchmarks and singularities in secondary schools” show the unique and defining elements of several educational centers considered centers of renewal, from five Spanish autonomous communities. They conclude that each school has its own singularity, with the school project being the tool used to construct the educational meaning of its practices.

Olger Gutiérrez-Aguilar, Osbaldo Turpo-Gebera, Sandra Chicaña-Huanca, Kevin Mario Laura-De La Cruz, Gerber Pérez-Postigo, Rocio Diaz Zavala and Ingrid Osorio Ccoya. “Digital skills and digital citizenship education: An analysis based on structural equation modeling” examine the correlation between digital skills and digital citizenship among students enrolled at a university in Peru. The findings of this study indicate that the development of participation skills, whether in traditional face-to-face settings or in online digital platforms, significantly influences the formation of digital citizenship.

Pablo Dúo Terrón “Generative artificial intelligence: Educational reflections from an analysis of scientific production” analyses the scientific production of AI-Gen in the educational field. The study includes seven keyword clusters, where the IA-Gen cluster which is related to terms such as challenges, risks and opportunities are highlighted. Further research is required on the use of AI-Gen during the teaching-learning process in several educational stages to prevent plagiarism and to obtain a comprehensive understanding of this technology as an educational resource.

Mohamad Khasawneh “The influence of Twitter hashtags in building supportive online communities for parents of children with special needs” looks how Twitter hashtags have helped develop and maintain

online groups in Saudi Arabia to provide resources and encouragement to parents of children with special needs.

Carmen Romero García, Francisco Javier Pericacho Gómez, Olga Buzón García and Jordi Feu Gelis “Personalised education in current pedagogical renewal centers” analyse how learning is personalised in primary education centres that promote processes of pedagogical renewal. A series of common elements of personalisation of learning are evident, such as student autonomy, individualisation of learning and freedom of choice of learning itineraries, flexible curricular organisation, active methodology where group work is a key element and the organisation of timetables without previously established patterns.

Aura Hernández-Sabaté, Lluís Albarracín, Oriol Ramos, Debora Gil, Carles Sánchez, Enric Martí “From traditional teaching to flipped classroom: Impact on learning in engineering degrees” presents a quantitative study that compares the potential for the development of engineering students' competences in the design and use of databases using the flipped classroom methodology and the traditional teaching methodology. The results show that the application of the flipped classroom methodology provides different results depending on the learning promoted and the specific contents of the relational database subject.

Maria del Carmen Pegalajar-Palomino and Estefanía Martínez-Valdivia “ICT mediated gamification in education degrees: A commitment to sustainability” explore the perceptions of undergraduate education students towards ICT-mediated gamification. Results reflect a positive receptiveness on the part of the students towards ICT-supported gamification, considering it fun and dynamic.

Ana Pereles, Beatriz Ortega-Ruipérez and Miguel Lázaro “The power of metacognitive strategies to enhance critical thinking in online learning” verify whether the use of a digital tool, designed to promote the use of metacognitive strategies in self-regulated learning, increases the level of critical thinking during the learning process in trainee teachers in official online master's degrees. It shows significant improvements in all dimensions (substantive and dialogical) and associated basic skills (reading, writing and speaking) for those who used the tool for the promotion of metacognitive strategies.

Paco Abril Morales and Alba Castellsagué “Co-education and the feminist perspective in centres of pedagogical renewal: A critical analysis” explore the extent to which pedagogical renewal projects incorporate co-education and the feminist perspective in their principles and practices to the promotion of gender equality, inclusion and diversity, based on a qualitative approach in primary education renewal centres.

Roberto Duran-Novoa and Felipe Torres “Unveiling the impact of design methods on problem-solving performance in STEM education” analyse the relative impact of design methods on the problem-solving performance of university students and determine whether this influence goes beyond their background and the complexity of the problem. The results show a marked improvement in performance when working with methods that guide the development of solutions using design principles.

Devi Pratami, Nor Hasrul Akhmal, Muhd Ikmal Isyraf Mohd Maulana and Syed Ahmad Helmi Syed Hassan “Introducing Project-based Learning steps to the preschool teachers in Bandung, indonesia” analyse the impact of a workshop on PBL methodology implemented with nursery school teachers to train them in the steps of project-based learning. A significant impact of the training on the teachers is evident.

Olga Tapalova, Nadezhda Zhiyenbayeva and Ulzharkyn Abdigapbarova “Mechanisms and technologies for fostering the research and innovative capability in university teachers” examine the effects of a programme for the development of research and innovation competence in university teaching staff according to age and teaching experience. The programme has been effective in enhancing these competences, although differences have been found in the three groups of teachers established.

Cristina Valdés-Argüelles, Aquilina Fueyo Gutiérrez and María Verdeja “Gender perspectives on educational contributions to the study of video-gaming: A baseline feminist genealogy” her work takes a historical look at video games and their importance in culture and society. Video games will continue to be an important part of culture and society in the future, with an increasing presence in education. It is crucial to recognize the work of women and to address gender representation in video games.

Carles Serra and Eliseu Carbonell “Pedagogical renewal and intercultural education in Spain: The history of a mismatch?” examine the relationship established between what the history of education in Spain has identified as ‘pedagogical renewal’ and the proposals, experiences, reflections, meetings, and training spaces framed in what was identified at the time as ‘intercultural education’. The authors of the article argue that the main characteristics of the intercultural proposal would allow it to be identified with the movements, proposals, and practices of pedagogical renewal. Additionally, the authors highlight the commitment and involvement of individuals, groups and journals aligned with the pedagogical renewal in the promotion and defense of intercultural education.

We hope that this special issue will make sense in the educational community and serve to create a debate on the subject.

Keywords - Pedagogical renewal, innovative methodologies, educational technology, teacher training.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

References

- Aliaga, E. (2022). Estrategias personalizadas para la enseñanza en educación básica: estudio de revisión. *593, Digital Publisher CEIT*, 7(1-1), 332-342. <https://doi.org/10.33386/593dp.2022.1-1.975>
- Balladares-Burgos, J., & Valverde-Berrocoso, J. (2022). El modelo tecnopedagógico TPACK y su incidencia en la formación docente: una revisión de la literatura. *RECIE. Revista Caribeña de Investigación Educativa*, 6(1), 63-72. <https://doi.org/10.32541/recie.2022.v6i1.pp63-72>
- Beneyto, M., Carrete, N., Arregui, X., & Domingo, L. (2023). (Re)conceptualizando la renovación pedagógica en España. Una revisión sistemática. *REICE. Revista Iberoamericana sobre Calidad, Eficacia y Cambio en Educación*, 21(2), 9-30. <https://doi.org/10.15366/reice2023.21.2.001>
- Engel, A., & Coll, C. (2022). Entornos híbridos de enseñanza y aprendizaje para promover la personalización del aprendizaje. *RIED. Revista Iberoamericana de Educación a Distancia*, 25(1), 225-242. <https://doi.org/10.5944/ried.25.1.31489>
- Ermakova Y.D. (2020). Changing educational trends in the context of global digitalization of society. *Vestnik of Samara State Technical University Psychological and Pedagogical Sciences*, 17(2), 87-97. <https://doi.org/10.17673/vsgtu-pps.2020.2.7>
- Forero-Corba, W., & Negre Bennasar, F. (2024). Técnicas y aplicaciones del Machine Learning e inteligencia artificial en educación: una revisión sistemática. *RIED-Revista Iberoamericana de Educación a Distancia*, 27(1), 209–253. <https://doi.org/10.5944/ried.27.1.37491>

Guerrero-Quiñonez, A. J., Guagua, O. Q., & Barrera-Proañó, R. G. (2023). Gamified flipped classroom as a pedagogical strategy in higher education: From a systematic vision. *Ibero-American Journal of Education & Society Research*, 3(1), 238-243.

<https://doi.org/10.56183/iberoeds.v3i1.622>

Sharma, A., Mandot, P., & Singh, D. (2023). Innovative Learning Models and Their Impacts on the Transformation in Education. *International Journal for Research in Applied Science and Engineering Technology*, 11, 1792-1798 <https://doi.org/10.22214/ijraset.2023.56318>

To cite this article:

Romero-García, C., Buzón-García, O., & Amante García, B. (2024). Towards a sustainable school culture. *Journal of Technology and Science Education*, 14(3), 649-653. <https://doi.org/10.3926/jotse.2928>