



Technology, Differentiated Instruction, & Teaching 21st-Century Skills

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Editorial Comments

Technology, Differentiated Instruction, and Teaching 21st-Century Skills

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In this issue, we focus on technology, differentiated instruction, and teaching 21st-century skills. We begin with two technology-related articles, one that investigates the effect of virtual reality teaching and the interaction effect of gender and teaching methods on university students' academic performance, and another that explores teachers' perspectives on using ICT-based learning resources in schools. Then, we present two differentiated instruction articles, including one that synthesizes and analyzes the empirical evidence related to the effectiveness of differentiated instruction in diverse educational contexts, and another that explores specialized undergraduate programs for autistic college students and how faculty members who teach autistic students approach and promote self-advocacy. We then share three articles on the teaching of 21st-century skills, including one that demonstrates efficacy in enhancing students' problem-solving abilities and self-efficacy in STEM fields, one that illustrates the impact of the autonomous learning approach on learners and assesses their ability to sustain the learning process, and one that describes the experiences at four different Australian universities to showcase some of the innovative approaches taken to embed workforce-integrated learning in accounting education. Five additional articles are presented on educational globalization, pedagogical research competence, ecological literacy, and the teaching of idioms. This issue concludes with one dialogue and commentary paper, and a book review.

Technology

It has been suggested that virtual reality can simplify complex and difficult procedures into convenient actions. Nicholas Ogbonna Onele and Theresa Chiyere Oguanya conducted a quasi-experimental design study to investigate the effect of virtual reality teaching and the interaction effect of gender and teaching methods on university students' academic performance. The study revealed that students recorded high educational achievement in electronics technology when the course was taught in virtual reality, and the indirect instructional method in virtual reality created gender equality in the study of electronic technology in universities.

Integrating information and communication technology (ICT) into education is very important in the current digital era. Mochamad Kamil Budiarto, Asrowi, Gunarhadi, and Abdul

Rahman conducted qualitative case study research that explored teachers' perspectives on using ICT-based learning resources in schools. Results identified three themes, including motivation and readiness of teachers in utilizing ICT-based learning resources, teachers' perspectives and resource support of implementing ICT-based learning resources, and the challenges teachers faced when implementing ICT-based learning in the classroom. These findings can potentially assist in teachers' professional development in integrating ICT for dynamic and innovative learning in the digital era.

Differentiated Instruction

While differentiated instruction is widely accepted as a promising approach for addressing the diverse needs of learners, less is known about its effectiveness across various educational settings. Sam Ramaila conducted a systematic review that synthesizes and analyzes empirical evidence related to the effectiveness of differentiated instruction in diverse educational contexts.

Post-secondary educational students with autistic-spectrum disorders (ASD) face difficulty in self-advocating for their own needs. Abdul-Hakeem Imoro conducted a qualitative study to explore specialized undergraduate programs for autistic college students through semi-structured interviews with a thematic analysis of how faculty members who teach autistic students approach and promote self-advocacy among their undergraduates. Seven themes highlighted the challenges, approaches, and conceptual implementations of the findings on faculty approaches to students' development of self-advocacy skills.

Teaching 21st-Century Skills

In recent years, we have seen increasing importance placed on developing 21st-century skills in schools. Implementation of problem-based learning has demonstrated efficacy in enhancing students' problem-solving abilities and self-efficacy, particularly in STEM fields. Burhan Mustaqim, Muhammad Akhyar, Soetarno Joyoatmojo, and Roemintoyo used a qualitative descriptive method to explore the need for a Problem-Based Flipped Learning (PBFL) model with a STEM approach tailored to the needs of vocational high school students. Findings identified that the PBFL-STEM approach is a good fit for vocational high schools, providing significant possibilities to cultivate students' 21st-century talents.

Autonomous learning is a fundamental aspect of education that builds important skills, like critical thinking, problem-solving, and adaptability, which are important for achievement in a constantly changing professional environment. Hoo Fang Jing, Mohd Amin Mohd Noh, Zur 'Ain Harun, Rihan Ibrahim, and Nur' Ain Mohsin conducted a study to demonstrate the impact of the investigated autonomous learning approach on learners and assess their ability to sustain the learning process, hence fostering lifelong learning within the framework of formal education. The results showed that autonomous learning is achievable and that instructors' support and institutional collaboration will improve new curricula and courses.

Work-integrated learning (WIL) is designed to provide students with curriculum-aligned, experiential engagement with industry partners. It can be real or simulated through online, face-to-face, or workplace settings. Mark O'Rourke, Gillian Vesty, Sonia Magdziarz, Priyantha Mudalige, Connie Vitale, Dorothea Bowyer, Sujay Nair, and Sharon Soltys provide insights about educator preparedness for delivering technology-enhanced WIL programs, and an in-depth analysis of academic engagement with WIL designs.

Additional topics

Educational globalization has brought tremendous opportunities and complex challenges for educators teaching in transnational contexts. Yu Wu and Huan Gao conducted a case-study research study that explores the experiences of Chinese teachers temporarily teaching Mandarin Chinese in United States K-12 schools. Findings reveal that teachers' career difficulties arise from the use of teaching strategies that do not align well with the environments of the host schools and from insufficient cultural sensitivity. This study provides valuable insights into the preparation for transnational educators navigating cross-cultural teaching landscapes, thereby contributing to the discourse on international teacher-exchange programs.

Pedagogical research competence has recently become an educational outcome in post-secondary teacher-training programs. Karakat Nagymzhanova, Aigul Beisenbayeva, Saltanat Feizuldayeva, Begaim Zhiyentaeyva, and Batzhamal Abilova conducted a quantitative study at a pedagogical university that explored students' research competence and its contribution to their ability to synthesize knowledge through experimental activities. They also compared recent studies involving research competence in students by academic discipline, digital pedagogical competencies, and the perceived research competence of young scientists. They create a comprehensive framework for understanding research competence in future primary school teachers.

Expanding information related to environmental degradation is one potential approach to enhancing students' environmental literacy and awareness. Romi Isnanda, Syahrul Ramadhan, and Yenni Hayati employed a quantitative approach with a quasi-experimental research design study that investigated the relationship between students' skills in writing popular text-based articles and their ecological literacy. Findings revealed that environmental concern is the factor that has the most significant influence on students' writing ability. The study's implications hold significance for both educational and environmental awareness.

Idioms are sometimes viewed as one of the neglected areas in the second-language classroom. Cecilia Owusu Debrah and Mohammed Issaka conducted a descriptive qualitative case study that explored how teachers from the three main levels of education in two municipalities in the Bono Region of Ghana approached the teaching of idioms. Findings revealed that these instructors relied primarily on the core teaching materials and sometimes on other online resources for additional support. The implications are linked to pedagogy, training, and resource constraints that teachers may face and highlight the necessity for curriculum adjustments to cater to the inadequacies.

Book reviews

This issue includes one book review. Irvan Syahrizal reviewed the book, *Communicating Around Interculturality in Research and Education* (2024), which instructs readers on how to communicate interculturally and supports them in reflecting on how they can renegotiate and reconstruct knowledge, ideologies, and relationships around the notion of interculturality.

Dialogue and commentary

This issue includes one dialogue and commentary paper. Awu Isaac Oben and Xu Hui call for a radical transformation of pedagogical innovation in post-pandemic higher education,

advocating for a shift towards more flexible, inclusive, and student-centred learning models to create sustainable change. They highlight key strategies, such as hybrid models, personalized learning, active and experiential learning, and rethinking assessment methods.

It is my distinct pleasure to thank our contributing authors, reviewers, and editorial team members for their commitment to educational scholarship and its dissemination in *JTL*. It really does ‘take a village.’ For those who may be picking up *JTL* for the first time, consider joining the *JTL* family as an author or a reviewer. You are always welcome!

