

## Sub-Theme 4: Global Trends in Education

### Global Pedagogical Trends in Education

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#### Abstract

Education is a key concern of the 21st century, facing significant changes driven by technological advancement and evolving labour demands. This shift necessitates the integration of technology into teaching and learning, enabling both teachers and learners to generate new knowledge and apply innovative skills to enhance their lives and communities. Improved education systems are increasingly adopting Competence-Based Education (CBC) to align with contemporary trends. However, few studies have been systematically analysed global pedagogical trends and their impact on the labour market, highlighting the need for research in the area. This paper aimed to examine the global pedagogical trends in education through a systematic literature review of existing research papers and journal articles. The review focuses on articles published in recognized journals, with 250 research and journal articles initially reviewed. Of these, only 30 articles were selected based on their relevance to identified pedagogical trends, some of which include component of systematic literature reviews. Related studies revealed a paradigm shift in education, emphasising the role of pedagogy in teaching and learning. This shift places the learner at the centre of the process and the teacher in a supportive role. There is a strong focus on providing inclusive, affordable, equitable, and accessible education to all learners. Education practitioners should reimagine education to cater for the individual learner and societal needs, mastering the art of teaching, utilising technology, applying differentiated learning approaches, addressing 21st-century concerns and implementing Competence-Based Education to promote lifelong learning. This approach supports the Government of Uganda in developing policies that stimulate pedagogical innovations in education.

**Keywords:** Competence-Based Education, Lifelong learning, Pedagogy, Technology

#### Introduction

Global Pedagogical Trends (GPT) in education include personalised learning, flipped classroom, blended learning, gamification, technology and the 21st-century skills. These trends represent a paradigm shift from teacher-centred to learner centred approaches, focusing on the pedagogy and learning outcomes (Kaliisa et al., 2019). As nations and governments strive to adapt curricula and pedagogy to the Volatile, Unpredictable, Complex and Ambiguous (VUCA) world, they are implementing education reforms to develop competent human capital.

Countries such as Russia, the USA and China are integrating humanistic trend in education, aligning with their cultural norms and values within national education systems (Tolstova & Levasheva, 2019) China and the United States is a humanistic trend in education, which has its own national characteristics and peculiarities associated with the traditions, customs and particularity the development of national educational systems in these countries. The author reveals the general vector of development of the humanistic trend in education in Russia, China and the USA in the conditions of the electronic informational and educational environment, manifested in the following features. They are 1. This alignment aims to boost social and economic growth by promoting equity in education, creating a common scientific space, and redefining the roles of teachers and learners.

This paper examined GPTs are implemented in the teaching and learning process globally. GPTs refer to various teaching and learning approaches adopted to regional cultures. They range from traditional and indigenous methods to modern techniques, depending on national educational goals and philosophies aimed at improving communication, problem-solving, and resource sharing among learners (Chatti et al., 2007). The study reviewed the implementation of Global Pedagogical Trends (GPTs) by teachers to inform curricula reforms at both national and global levels, drawing from diverse scholarly works on technology use, personalised learning, flipped classrooms, and 21st-century skills.

Personalised learning is a key GPTs adopted worldwide, focusing on identifying individual learners' needs, goals, and skills. It involves creating personalised pathways, self-paced learning and leveraging the learning environment (Ilyas et al., 2021). This approach is recognised as a significant reform in contemporary education, emphasising methodology and learning outcomes (Pursel et al., 2016). In Uganda, personalised learning is gaining interest, particularly in the thematic and new lower secondary curriculum, to equip the learners with the desired learning outcomes.

Flipped classrooms represent another GPTs innovation, transforming learning environments to increase learner self-confidence, interest, and satisfaction while equipping them with lifelong skills (Rizi et al., 2017). This pedagogy encourages hands on activities outside the traditional classroom settings and is increasingly adopted globally.

Blended learning combines practical classroom lessons with online technology-facilitated sessions, allowing learners to adapt and utilise technology. And participate in global learning events (Wong 2022).

Gamification applies games in a non-game environment to enhance learning, motivation and engagement (Yen et al., 2018) online, and blended teaching modalities in an undergraduate Child Development course to determine if there were differences in student academic outcomes and course satisfaction across modalities. Student academic outcomes were measured by three examinations, one research paper assignment, and the overall course total grade. Course satisfaction was measured by administering the Student Opinion Questionnaire (SOQ). This approach supports skills acquisition in problem-solving, collaboration, and communication (Kapp, 2012). In Africa, games are used to teach basic numeracy and literacy skills.

Technology integration is a rapidly advancing GPT, prominently featuring in virtual reality and other technological application in education (Bekele et al., 2018). This trend focuses on incorporating technological pedagogical content to support the teaching and learning, equipping learners with lifelong skills, and fostering global interaction through flexible, adaptable, and interactive online courses

21st-century skills are critical for the future workforce, emphasising improved learning outcomes and producing highly skilled personnel for the global economy. Skills such as critical thinking, collaboration, communication, creativity, and computational skills are integral to modern education, ensuring learners are prepared for global context. (O'Lawrence 2017) economic growth depends on career and technical programs for skill training. Background: This study discusses the key area in promoting individual learning and skill training and discusses the importance of career education and training as a way of promoting economic growth. Methodology : This study uses a qualitative study approach to investigate and report on the status and influence of Workforce Education and Development and its economic importance. Contribution: This report contributes to the knowledge base common to all work settings that can solve many human performance problems in the workplace. Findings: This study also justifies and validates the ideas on the importance of workforce education and development in the 21st century as a way of developing economic growth and providing learning to make individuals competitive in the global economy. Recommendations for Practitioners : For practitioners, this study suggests that we must always have discussions of what leads to career success and understanding that there is not enough high-skill/high-wage employment to go around. Therefore, developing these skills requires a decision about a career or related group of jobs to prepare to compete for them; we have to provide training needed in order to be competitive in global economy. Recommendation for Researchers: Researchers have to develop strategies to promote career direction with willingness to evaluate the level of academic interest, level of career focus and readiness for life away from home (attitudes, skills and knowledge of self

These GPTs are central to the evolving educational landscape and form the focus of this paper.

### **Related literature**

The introduction of General-Purpose Technologies (GPTs) in education has significantly increased access to learning across the globe. Online technology course shave addressed unmet educational needs, transforming the delivery of knowledge, skills and values (Magrelli et al., 2013). Magrelli further asserts that emerging technologies have made teaching and learning abstract concepts more practical and realistic to learners.

### **Personalized Learning (PL) as an Emerging GPT**

Personalised Learning (PL) is an emerging GPT, characterised by five dimensions as outlined in an educational policy report: assessment for learning, teaching and learning strategies, curriculum choices, school centred approach to school organisation, and strong partnerships beyond school (Shemshack & Spector, 2020). The United States National Education Technology plan NETP (2017) defines Personalised Learning as instruction where the pace of learning and approach are tailored to the individual learner's needs, emphasising learner-driven activities (Han & Ellis, 2020). Additionally, the American Psychological Association Presidential Taskforce on Psychology in Education (1993, as cited in Lee et al, 2018) describe Personalised Learning Plan (PLP) as a customised instruction plan addressing individual differences such as career goal, characteristics, and interests. PLP helps adjust learning events and methods to each learner's pace. Supporting this, Li and Wong, (2021) proposed an eye-tracking system to determine user interest and behaviour.

However, Bernacki, Greene, & Lobczowski. (2021) identify a research gap in PL environment, emphasising the need to focus on emotions and personality, as they significantly play a influence adaptive systems related to feedback.

Information Communication Technology (ICT) is recognised for boosting PL, with rapid development cited by Xie, Chu, Hwang, & Wang. (2019). Similarly, (Zhang et al., 2020) advocate for adaptive learning systems that support individual learning.

Personalised Learning is underpinned by Constructivism theory, which posits that individuals construct knowledge based on their prior experiences through language and social interaction. The term Personalised Learning is often used interchangeably with differentiated and individualised learning. Research indicates that Personalised Learning is particularly beneficial for learners with Special Education Needs (SEN), as they have Individualised Education Plans (IEP) mandated by some states to ensure schools accommodate their needs.

### **Technology as an Emerging GPT**

While technology has been evolving for years, it gained prominence in the Third Industrial Revolution (3IR), which focused on electronics and information technology. Integrating technology into curriculum materials was advocated to make learning more interesting and motivating, supported by educational games (S.I., 2020). Azmi et al. (2018) assert that these games enable learners to expand content and apply knowledge and skills in real life. Innovations like Virtual Reality have also been introduced.

The Fourth Industrial Revolution (4IR) has brought about more technological innovations, including Artificial Intelligence (AI), which helps learners acquire knowledge, skills and values more easily and engage in realistic research and hands-on projects. Technological advancements have transformed teaching methods and learning environments. Cronje. (2020) argues that these advancements are reflected in Blended Learning, Virtual Classes, online classroom portals, and social media platform, making learning more flexible and accommodating multiple learning styles.

### **Related GPTs Reviews**

Since this study focuses on exploring GPTs in education, it is important to summarise the existing research in this field. Table 1 presents a review of previous studies on GPTs.

### Trends within the Systematic Review

No	Review	Year of Publication	Focus	No of Studies	Year Range of Reviewed Studies
1)	Systematic Review of Research on Personalized Learning	2021	Personalised Learning	60	2021
2)	An Operationalised Understanding of Personalized Learning	2016	Personalised Learning	45	2016-2023
3)	Learning Environment Framework	2010	Usability of Mooc Environment	75	2010-2019
4)	Moving towards Environmental Sustainability: Information & Communication Technology, Freight Transport CO2 Emissions	2021	ICTs & Transport Emission Systems	23	2021
5)	A Systematic Review of Research on Personalised Learning	2021	Personalised Learning	86	2000-2020
6)	Exploring Lecturer's Readiness for 21st Century Education in Malaysian Higher Learning Institutions	2020	21st-Century Skills	60	2003-2018
7)	Meta-verse Framework E-Learning Environments	2022	E - Learning Environment	46	2007-2021
8)	Exploring the Trends of Educational Virtual Reality games	2020	Virtual Reality Games	26	2005-2019
9)	Development Trends in the Subject of Pedagogy & Education Systems	2021	Pedagogy & the Education System	69	2020
10)	Current Trends in Education Technology: Worldwide	2020	Technology	64	2019-2022
11)	4 Changes that will Shape the Classroom of the Future: Making Education Fully Technological	2016	Technology	72	2016-2022
12)	What are the 21st Skills Every Student Needs	2016	21st-Century Skills	61	2016
13)	Theories of Globalisation	2007	Globalisation	64	2007

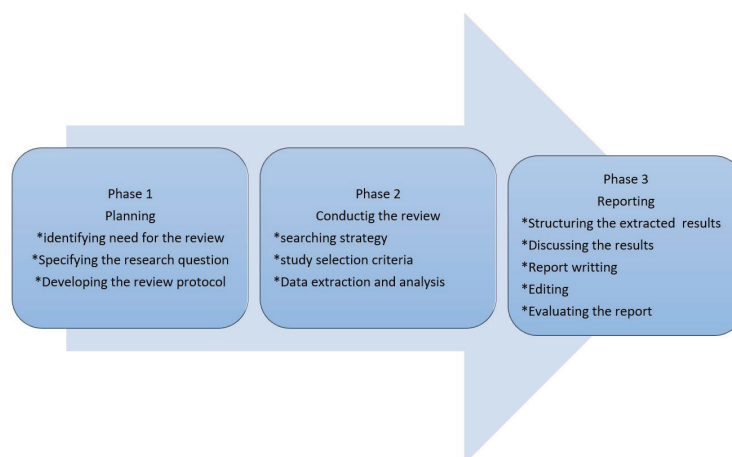
No	Review	Year of Publication	Focus	No of Studies	Year Range of Reviewed Studies
14)	Applying Gamification to Asynchronous Online Discussions	2019	Gamification	60	2019-
15)	Need-Supporting Gamification in Education; An Assessment of Motivational Effects Over Time. Computers & Education	2018	Gamification	64	2018
16)	Blended Learning: the New Normal and Emerging Technologies	2018	Blended Learning	19	2018
17)	Blended Learning: An innovative approach	2017	Blended Learning	55	2017
18)	Flipped Classrooms effectiveness in Teaching Anatomy	2022	Flipped Classroom	68	2022
19)	Flipped Classrooms: A Review of Key Ideas and Recommendations for Practice	2016	Flipped Classrooms	104	2016
20)	Flipped Classrooms: A Review of its Advantages and Disadvantages	2018	Flipped Classrooms	99	2018

Table 1 Related Literature to the Global Pedagogical Trends

We realise that minimal efforts have been made to systematically review GPTs in education, particularly concerning personalised learning, flipped classrooms, technology, and the 21st-century skills. Given the dynamic and fast-growing world that we are living in, it is important to prepare citizens to fit in it and support the socio-economic growth of their nations. Therefore, this paper provides a systematic literature review examining GPTs in education in three selected areas: Personalised Learning, Technology, and 21st-Century Skills, to provide insights for future researchers in this field.

## Methodology

Guidelines for conducting a systematic literature review, as proposed by Kitchenham (2007), were followed. Scholarly articles from journals and electronic resources were utilised to extract abstracts and full papers related to GPTs. To aid organisation and management of the collected literature, Kitchenham's (2007) guidelines were divided into three phases: Planning, Conducting of the Review, and Reporting. These phases are illustrated below in Figure 1.



### Phase 1. Planning the Review

This phase involves identifying the need for the review, specifying the research questions, and developing a review protocol. Studies related to GPTs in education, with a focus on Personalised Learning, Technology, and 21st-Century Skills, were reviewed due to their significant impact on pedagogical strategies in the teaching and learning process.

### Phase 2. Conducting the Review

This phase involves following the guidelines for carrying out the systematic literature review as provided by Kitchenham (2007). To maintain objectivity, the search engines used to guide the study are listed in table 2. The preliminary reviews in table 1 informed the research framework and the questions, with a narrowed focus on GPTs in education. Articles were selected depending on their relevance to the question. The researcher read abstracts and scanned some full papers to gather content aligned with GPTs. Articles that did not focus on personalised Learning, Technology, and 21st-Century Skills were excluded. Out of the 250 journal articles and abstracts scanned from three databases, only 30 articles were included in this study.

Table 2: Search Engine

Database Source	Search Strategy
Google Scholar	Title & Abstract
Elsevier Journal	Full Paper Pdf
Google com	Title
Science Direct	Alternative Search
Wiley Journal	Systematic Literature Review Paper

In line with the data extraction and analysis, data was coded and themed according to the study on GPTs in education. A clear rationale for the review was established, and specific research questions were adopted for executing the review. These included:

1. Which terms are synonymously used with Personalised Learning?
2. Which publications are available on Personalised Learning?
3. Which database provides literature on Personalised Learning?
4. Which learning technology themes have been evaluated and reviewed?
5. What are the findings relating to use of technology in education?
6. Which 21st-century skills are emphasised and researched in relation to education?

Following this, data extraction and analysis were conducted. The extraction process is illustrated in Figure 2 below.

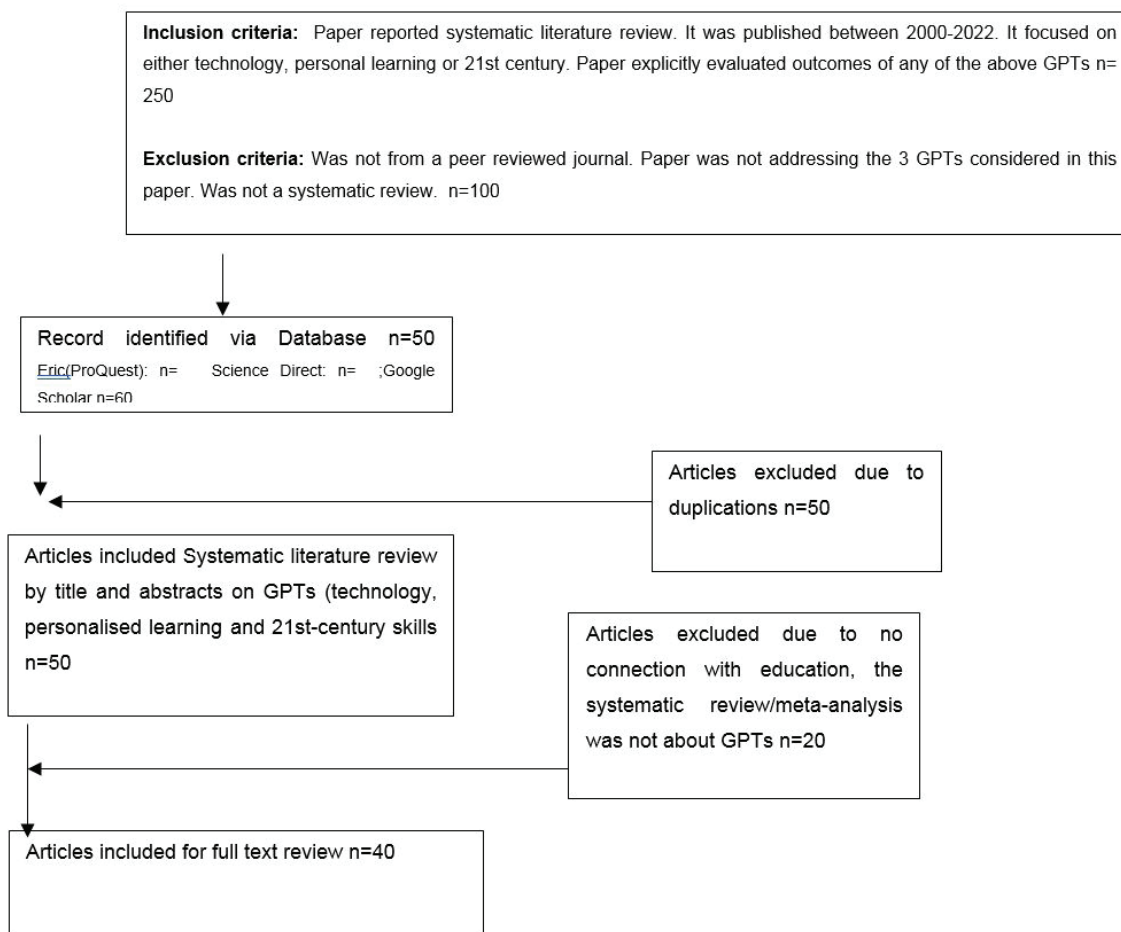


Figure 2 A diagrammatic representation of the literature selection process as adapted from Jennifer and Bower (2019)

### Phase 3. Reporting the Findings

This phase involves reporting, structuring of the extracted results, discussing them, editing the report and evaluating it. The results are organised categorically as Personalised Learning, Technology, and the 21st-Century Skills.



## Personalised Learning (PL)

The review focused on Personalised Learning as a GPT in education in terms of the synonymous terms used alongside it, published papers on PL seem to dominate and selected data bases for PL as illustrated in the tables below.

Table showing terms synonymously used with Personalised Learning by journal articles

Journal Name	Personalized Learning	Adaptive	Individualized	Customized
Computer and Education	6	4	0	0
British Journal of Education	1	3	0	0
Journal of Education Technology and Society	4	3	2	0
Journal of Computer Assisted Learning	3	0	0	0
Education and Information Technology	6	2	0	0
Education Technology, Research and Development	2	1	1	0
TOTAL	22	13	3	0

The table on terms synonymously used with Personalised Learning, reflects that the close used is adaptive, thus journal articles that focused on Individualised and customized learning were excluded from the study since little information was availed from them and out of the remaining 30 articles, only were considered in this study.

Table showing full papers published in journals on Personalised Learning

Journal Name	Papers in Phase 1	Papers after exclusion 1	Papers after exclusion 2
Computers and Education	100	30	10
British Journal of Education	20	5	3
Journal of Education Technology and Society	30	10	5
Journal of Computer Assisted Learning	30	6	3
Education and Information Technology	45	20	4
Education Technology and Research Development	25	20	5
TOTAL	250	91	32

A total of 250 journal papers on Personalised Learning were scanned. Papers published outside the period from 2000 to 2022 were excluded from the study. Another exclusion criteria were the publication journal; any journal not listed in the predefined table was excluded. The focus was then drawn on systematic literature reviews on Personalised Learning, resulting in only 30 fully published papers being considered to guide the study.

## Technology

The study examined how technology was being adapted as a GPT to guide teaching and learning from 2000 to 2023. The guiding questions focused on identifying technology use, themes reviewed and evaluated, and findings related to technology in education. Key areas of focus included pedagogical uses of technology Yepes et al. (2022), the impact on community and systems (Juniu, 2011) rather than thinking of them in isolation. In order to teach in a given discipline, the teacher must have knowledge of the subject, an understanding of the best teaching strategies for presenting the content, and knowledge of the learners' characteristics and of the educational context (e.g., the gymnasium, and factors affecting use of technology in education (Tondeur et al., 2017).

A meta-analysis was conducted to systematically review literature related to technology, collecting quantitative data. Specific technologies aiding learning in various fields were analysed, including game based learning in primary education (Hailey et al., 2016) secondary and tertiary education. Despite this recognition and utilisation there is still a lack of empirical evidence supporting GBL as an approach. This paper presents the findings of a systematic literature review performed from 2000 to 2013 specifically looking at quality empirical studies associated with the application of GBL in Primary Education (PE, the impact of learner response systems in education (Cárdenas-Moncada et al., 2020), and reviews of engineering education (Borrego et al., 2014). The effectiveness of technology in classrooms was examined by Archer et al. (2014) through meta-analyses of reviews on learning technology. This revealed the challenge for researchers and educators in understanding the trends and patterns of technology use. Supporting themes from reviews included patterns of interaction and behaviour (Li Min-yan & Cui Yan-qiang, 2015), different pedagogical uses of technology (Донской et al., 2021), institutional and systematic factors affecting the use of technology in education (Wang et al., 2021) there is scarce research exploring the older adults' attitudes towards and intention to use such technologies. This paper is based on a systematic review of existing literature to explore the multifarious factors influencing independent community-living older adults' attitudes towards and intention to use LDC technologies. Methods: Articles published in English between 2006 and 2020 were reviewed by searching electronic databases of PubMed, ProQuest, EBSCOhost. The inclusion criteria were limited to quantitative, qualitative, or mixed-methods studies that involved: 1.

## The 21st-Century Skills

The guiding question for 21st-century skills was: Which 21st-century skills are emphasised and researched in education? These skills are also known as the soft skills, include communication, critical thinking, creativity, collaboration, problem-solving, self-efficacy, and technology. They are emphasised in the Organisation for Economic Cooperation and Development (OECD) 2030 map for future workforce skills (Shirai et al., 2021). The OECD asserts that modern teaching and learning should focus on outcomes and producing highly skilled personnel for the industry.

In our technology-advanced world, integrating technology into subject materials is now common. Various Open Online courses have been developed and made accessible to learners at low or no cost. These resources transform lives globally, enabling learners to network with scientists and specialists to enrich their knowledge. This international collaboration has led to co-authored courses in Europe, focusing on building innovative, resilient, and productive economies and communities. This is achieved by creating quality learning time, bridging the gap between curriculum intent and learning outcomes, developing content that promote critical thinking, and providing equitable curricula for all learners. The literature emphasises that 21st-century skills are essential for learners' success in college and careers in the globalised, high-tech, knowledge-based world (Nariman, 2014)

## Discussion

The study revealed that GPTs in education have been increasing since 2007 to respond to the VUCA world and prepare learners to address unpredictable problems. Many studies integrating personalised learning, technology, and 21st-century skills have emphasised pedagogy through Personal Development Education (PDE) workshops. Jacobson-Lundeberg (2016) argued that PDE, focusing on the skills embedded within pedagogical practice, mitigates patterns of mis-education. Soft skills are emphasised because they are highly valued in the workplace. Noah & Aziz. (2020) noted that employers rate soft skills as the highest in importance relative to workplace values and norms.

21st-century skills were portrayed as enhancing confidence, self-efficacy, and credibility. Van Laar et al. (2020) stated that communication and collaboration are gateways to critical thinking, problem-solving, stress management and risk-taking. Technology is being advocated for as a GPT in education, with innovation like embedding gaming in teaching and learning to relate to real-world contexts. Likitweerawatong & Palee. (2018) noted that adopting games in education is sometimes challenging, particularly when using keyboards. Although a few games are tailored to education, more are needed to boost the sector. Additionally, technologists worldwide Limitations often lack the expertise to design learning activities tailored to desired outcomes.

1. The study focused on three GPTs in education: personalised learning, technology, and 21st-century skills, without considering others equally important ones.
2. The study did not consider multi-cultural use of GPTs, such as journal articles and abstracts in languages other than English.
3. Cross-comparative reviews sharing the practice of the same GPT in education across different countries were not considered.
4. Researchers and policymakers fear technology might take over the education sector

## Conclusions

Globalisation is a fast-growing trend that impacts education reforms and curriculum development. Education practitioners must align teaching and learning with workplace skills, ensuring lifelong learning and global community engagement. Educators need to update their knowledge for self- development and international collaboration. GPTs in education should focus on enabling collaboration and networking among learners from different continents. More support technologies should be adapted to operationalise online courses and curricula for learners to select according to their preference.

Educationists should emphasise lifelong learning by equipping learners with technologies and skills requiring continuous professional development. With Competence-Based Education (CBE) being advocated, teaching and learning are becoming more flexible and dynamic, occurring outside traditional classrooms. Practitioners must pay close attention to prevailing technology trends and their daily life impacts. Digital learning is becoming the new norm, supporting the production of competent citizens ready for the workforce. However, cognitive overload is a threat due to vast amount of online information. Educators must filter available information and facilitate its use in a various social-economic contexts.

## Recommendation

A cross-comparative review study on GPTs, sharing practices of the same GPT in education across two or more countries, should be conducted and shared to provide clear benchmarks for further studies.

## References

- Azmi, A. N., Kamin, Y., Noordin, M. K., & Ahmad, A. N. (2018). Towards industrial revolution 4.0: Employers' expectations on fresh engineering graduates. *International Journal of Engineering and Technology(UAE)*. <https://doi.org/10.14419/ijet.v7i4.28.22593>
- Bekele, M. K., Town, C., Pierdicca, R., Frontoni, E., & Malinverni, E. V. A. S. (2018). A Survey of Augmented, Virtual, and Mixed Reality. *Journal on Computing and Cultural Heritage*, 11(2), 36.
- Bernacki, M. L., Greene, M. J., & Lobczowski, N. G. (2021). A Systematic Review of Research on Personalized Learning: Personalized by Whom, to What, How, and for What Purpose(s)? In *Educational Psychology Review*. <https://doi.org/10.1007/s10648-021-09615-8>
- Borrego, M., Foster, M. J., & Froyd, J. E. (2014). Systematic literature reviews in engineering education and other developing interdisciplinary fields. *Journal of Engineering Education*. <https://doi.org/10.1002/jee.20038>
- Cárdenas-Moncada, C., Véliz-Campos, M., & Véliz, L. (2020). Game-based student response systems: The impact of Kahoot in a Chilean vocational higher education EFL classroom. *CALL-EJ*.
- Chatti, M. A., Jarke, M., & Frosch-Wilke, D. (2007). The future of e-learning: a shift to knowledge networking and social software. *International Journal of Knowledge and Learning*, 3(4-5), 404-420. <https://doi.org/10.1504/ijkl.2007.016702>
- Cronje, J. C. (2020). Towards a new definition of blended learning. *Electronic Journal of E-Learning*. <https://doi.org/10.34190/EJEL.20.18.2.001>
- Hainey, T., Connolly, T. M., Boyle, E. A., Wilson, A., & Razak, A. (2016). A systematic literature review of games-based learning empirical evidence in primary education. *Computers and Education*, 102, 202-223. <https://doi.org/10.1016/j.compedu.2016.09.001>
- Han, F., & Ellis, R. (2020). Personalised learning networks in the university blended learning. *Comunicar*. <https://doi.org/10.3916/C62-2020-02>
- Ilyas, R. A., Sapuan, S. M., Asyraf, M. R. M., Atikah, M. S. N., & Ibrahim, R. (2021). *Mechanical and Dynamic Mechanical Analysis of Bio-based*. 49-76.
- Jacobson-Lundeberg, V. (2016). Pedagogical Implementation of 21st Century Skills. *Educational Leadership and Administration: Teaching and Program Development*.
- Juniu, S. (2011). Pedagogical Uses of Technology in Physical Education. *Journal of Physical Education, Recreation & Dance*. <https://doi.org/10.1080/07303084.2011.10598692>
- Kaliisa, R., Palmer, E., & Miller, J. (2019). *Mobile learning in higher education : A comparative analysis of developed and developing country contexts*. 5(2), 546-561. <https://doi.org/10.1111/bjet.12583>
- Kapp, K. M. (2012). The Gamification of Learning and Instruction: Game-based Methods and ... - Karl M. Kapp - Google Books. In *The Gamification of Learning and Instruction*.
- Kitchenham, B. (2007). Guidelines for performing systematic literature reviews in software engineering. *Technical Report, Ver. 2.3 EBSE Technical Report*. EBSE.
- Klimova, B., Pikhart, M., Polakova, P., Cerna, M., Yayilgan, S. Y., & Shaikh, S. (2023). A Systematic Review on the Use of Emerging Technologies in Teaching English as an Applied Language at the University Level. In *Systems*. <https://doi.org/10.3390/systems11010042>

- Li, K. C., & Wong, B. T. M. (2021). Features and trends of personalised learning: a review of journal publications from 2001 to 2018. *Interactive Learning Environments*. <https://doi.org/10.1080/10494820.2020.1811735>
- LI Min-yan, & CUI Yan-qiang. (2015). WU Mi's Education and Thoughts. *Sino-US English Teaching*. <https://doi.org/10.17265/1539-8072/2015.02.005>
- Likitweerawong, K., & Palee, P. (2018). The virtual reality serious game for learning driving skills before taking practical test. *3rd International Conference on Digital Arts, Media and Technology, ICDAMT 2018*, 158–161. <https://doi.org/10.1109/ICDAMT.2018.8376515>
- Magrelli, S., Jermann, P., Noris, B., Ansermet, F., Hentsch, F., Nadel, J., & Billard, A. (2013). Social orienting of children with autism to facial expressions and speech: A study with a wearable eye-tracker in naturalistic settings. *Frontiers in Psychology*. <https://doi.org/10.3389/fpsyg.2013.00840>
- Nariman, N. (2014). Problem-based Science Inquiry: Challenges and Possibilities for Addressing 21st Century Skills. *ProQuest Dissertations and Theses*.
- Noah, J. B., & Abdul Aziz, A. (2020). A Systematic review on soft skills development among university graduates. *EDUCATUM Journal of Social Sciences*. <https://doi.org/10.37134/ejoss.vol6.1.6.2020>
- O'Lawrence, H. (2017). The Workforce for the 21st Century. *Issues in Informing Science and Information Technology*. <https://doi.org/10.28945/3724>
- Pursel, B. K., Zhang, L., Jablokow, K. W., Choi, G. W., & Velegol, D. (2016). *Understanding MOOC students: motivations and behaviours indicative of MOOC completion*. 202–217. <https://doi.org/10.1111/jcal.12131>
- Rizi, F. S., Granitzer, M., & Ziegler, K. (2017). Global and local feature learning for ego-network analysis. *Proceedings - International Workshop on Database and Expert Systems Applications, DEXA*. <https://doi.org/10.1109/DEXA.2017.36>
- S.I., B. (2020). A Review of Public Secondary Schools Effectiveness in Nigeria: Challenges and Managing Strategies. *International Journal of Psychosocial Rehabilitation*. <https://doi.org/10.37200/ijpr/v24i5/pr2020229>
- Shemshack, A., & Spector, J. M. (2020). A systematic literature review of personalized learning terms. *Smart Learning Environments*, 7(1). <https://doi.org/10.1186/s40561-020-00140-9>
- SHIRAI, S., SUWA, T., & MORI, T. (2021). OECD Learning Compass 2030. *Japanese Journal of Environmental Education*. [https://doi.org/10.5647/jsoee.31.3\\_3](https://doi.org/10.5647/jsoee.31.3_3)
- Tolstova, O., & Levasheva, Y. (2019). Humanistic trend in education in a global context. *SHS Web of Conferences*, 69, 00121. <https://doi.org/10.1051/shsconf/20196900121>
- Tondeur, J., van Braak, J., Ertmer, P. A., & Ottenbreit-Leftwich, A. (2017). Understanding the relationship between teachers' pedagogical beliefs and technology use in education: a systematic review of qualitative evidence. *Educational Technology Research and Development*. <https://doi.org/10.1007/s11423-016-9481-2>
- van Laar, E., van Deursen, A. J. A. M., van Dijk, J. A. G. M., & de Haan, J. (2020). Determinants of 21st-Century Skills and 21st-Century Digital Skills for Workers: A Systematic Literature Review. In *SAGE Open*. <https://doi.org/10.1177/2158244019900176>

Wang, J., Fu, Y., Lou, V., Tan, S. Y., & Chui, E. (2021). A systematic review of factors influencing attitudes towards and intention to use the long-distance caregiving technologies for older adults. In *International Journal of Medical Informatics*. <https://doi.org/10.1016/j.ijmedinf.2021.104536>

Wong, R. (2022). Basis psychological needs of students in blended learning. *Interactive Learning Environments*. <https://doi.org/10.1080/10494820.2019.1703010>

Xie, H., Chu, H. C., Hwang, G. J., & Wang, C. C. (2019). Trends and development in technology-enhanced adaptive/personalized learning: A systematic review of journal publications from 2007 to 2017. *Computers and Education*. <https://doi.org/10.1016/j.compedu.2019.103599>

Yen, S. C., Lo, Y., Lee, A., & Enriquez, J. M. (2018). Learning online, offline, and in-between: comparing student academic outcomes and course satisfaction in face-to-face, online, and blended teaching modalities. *Education and Information Technologies*, 23(5), 2141–2153. <https://doi.org/10.1007/s10639-018-9707-5>

Yepes I., Barone, D. A. C., & PORCIUNCULA, C. M. D. (2022). Use of Drones as Pedagogical Technology in STEM Disciplines. *Informatics in Education*. <https://doi.org/10.15388/infedu.2022.08>

Zhang, L., Basham, J. D., & Yang, S. (2020). Understanding the implementation of personalized learning: A research synthesis. In *Educational Research Review*. <https://doi.org/10.1016/j.edurev.2020.100339>

Донской, А. Г., Борченко, И. Д., Ларюшкин, С. А., & Дударева, О. Б. (2021). Application of meta-analysis method in humanitarian and pedagogical research. *Tomsk State Pedagogical University Bulletin*. <https://doi.org/10.23951/1609-624x-2021-5-78-89>