MANAGEMENT MODELS AND METHODS IN MODERN EDUCATION: INFORMATION TECHNOLOGIES, SUSTAINABILITY AND DEVELOPMENT

MODELOS E MÉTODOS DE GESTÃO NA EDUCAÇÃO MODERNA: TECNOLOGIAS DE INFORMAÇÃO, SUSTENTABILIDADE E DESENVOLVIMENTO

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Abstract. Modern education is undergoing significant transformations influenced by information technologies, raising questions of sustainability and development within the educational community and in practice. This issue becomes particularly pertinent in the context of constant societal changes and global competition. Problem Statement: The research is focused on exploring contemporary models and management methods in the education sector, with a specific emphasis on information technologies, sustainability, and development. The authors aim to uncover the role of information technologies in supporting the sustainable development of educational systems and identify optimal models and management methods to achieve this goal. Research Objective: The primary objective of this study is to analyze innovative approaches to education management that are based on the use of information technologies to enhance the quality of education and ensure its sustainability and development. The authors seek to assess domestic and international research and identify key success factors in education management within the context of modern challenges. Object and Subject of Research: The object of this study is education management systems, while the subject includes models and management methods, particularly those based on information technologies. The authors examine various levels of education. Research Methods: In this study, the authors employed literature analysis, including the findings of contemporary scientific research and publications by domestic and international authors. By accumulating and selecting relevant statistical data, trends in education development were identified. The analysis of these trends allowed for the aggregation of influential factors in developmental processes. Based on this analysis and through the use of modelling methods, an organizational management model for the education system was developed to ensure its sustainable development. Tasks Accomplished: In this research, key issues in education management were identified, the impact of information technologies on this sphere was assessed, and innovative management approaches aimed at ensuring the sustainability and development of educational systems were proposed. Conclusions and Recommendations: Based on the research findings, it can be concluded that information technologies hold significant potential for improving the quality of education and ensuring its sustainability and development. The authors recommend educational institutions actively incorporate information technologies into the learning process and utilize modern models and management methods to achieve the goals of sustainable development in education. This article is dedicated to promoting the advancement of contemporary education and fostering knowledge exchange in this vital field.

Keywords: digitization of the educational sphere, information technologies, digital tools, social management, digital communications, learning.

Resumo. A educação moderna está a passar por transformações significativas influenciadas pelas tecnologias de informação, levantando questões de sustentabilidade e desenvolvimento na comunidade educativa e na prática. Esta questão torna-se particularmente pertinente no contexto de constantes mudanças sociais e de concorrência global. Declaração do problema: A pesquisa está focada na exploração de modelos contemporâneos e métodos de gestão no setor educacional, com ênfase específica em tecnologias de informação, sustentabilidade e desenvolvimento. Os autores pretendem descobrir o papel das tecnologias de informação no apoio ao desenvolvimento sustentável dos sistemas educativos e identificar modelos e métodos de gestão ideais para atingir este objetivo. Objetivo de pesquisa: O objetivo principal deste estudo é analisar abordagens inovadoras de gestão educacional que se baseiam no uso de tecnologias de informação para melhorar a qualidade da educação e garantir sua sustentabilidade e desenvolvimento. Os autores procuram avaliar a investigação nacional e internacional e identificar os principais factores de sucesso na gestão da educação no contexto dos desafios modernos. Objeto e Objeto de Pesquisa: O objeto deste estudo

são os sistemas de gestão educacional, enquanto o tema inclui modelos e métodos de gestão, particularmente aqueles baseados em tecnologias de informação. Os autores examinam vários níveis de educação. Métodos de pesquisa: Neste estudo, os autores empregaram análise de literatura, incluindo resultados de pesquisas científicas contemporâneas e publicações de autores nacionais e internacionais. Ao acumular e seleccionar dados estatísticos relevantes, foram identificadas tendências no desenvolvimento da educação. A análise destas tendências permitiu agregar factores influentes nos processos de desenvolvimento. Com base nesta análise e através da utilização de métodos de modelação, foi desenvolvido um modelo de gestão organizacional do sistema educativo para garantir o seu desenvolvimento sustentável. Tarefas Cumpridas: Nesta investigação foram identificadas questões-chave na gestão da educação, avaliado o impacto das tecnologias de informação nesta esfera e propostas abordagens de gestão inovadoras destinadas a garantir a sustentabilidade e o desenvolvimento dos sistemas educativos. Conclusões e Recomendações: Com base nos resultados da investigação, pode-se concluir que as tecnologias de informação têm um potencial significativo para melhorar a qualidade da educação e garantir a sua sustentabilidade e desenvolvimento. Os autores recomendam que as instituições educacionais incorporem ativamente as tecnologias da informação no processo de aprendizagem e utilizem modelos e métodos de gestão modernos para alcançar os objetivos do desenvolvimento sustentável na educação. Este artigo se dedica a promover o avanço da educação contemporânea e a fomentar o intercâmbio de conhecimentos neste campo vital.

Palavras-chave: digitalização da esfera educacional, tecnologias de informação, ferramentas digitais, gestão social, comunicações digitais, aprendizagem.

INTRODUCTION

Modern education is undergoing significant transformations driven by the widespread use of information technologies, which pose a series of substantial problems and challenges to the academic and practical communities. The issue of managing and implementing information technologies into the education system becomes particularly relevant in the context of constant societal changes, technological revolutions, and global competition. The growth of internet access and the proliferation of digital technologies have reshaped how people learn and teach. Online resources, electronic textbooks, video lessons, and other digital tools have become integral parts of education. The development of information technologies enables the creation of individualized learning programs and the adaptation of education to the needs of each student, which enhances the effectiveness of education. The COVID-19 pandemic and the full-scale military aggression by the Russian Federation against Ukraine have underscored the importance of remote work and learning. The use of remote technologies and infrastructure has become indispensable for the normal functioning of educational institutions. With proper management and utilization of information technologies, the quality of education can be enhanced, and the sustainability and development of educational systems can be ensured. Digital technologies can help make education more accessible to various social and geographical groups of the population. However, as information technologies advance, a problem of insufficient digital literacy among teachers and students arises. According to UNESCO data, as of 2021, approximately 1.6 billion students worldwide were affected by the cancellation of classes due to the COVID-19 pandemic, emphasizing the necessity of digital solutions in education. Nevertheless, according to the United Nations, more than half of the world's population (approximately 4.6 billion people) lacks access to the internet, creating a problem of inequality in access to digital education. Therefore, the issue of managing and implementing information technologies in modern education holds significant potential to influence the quality of learning, the sustainability, and the development of educational systems. Contemporary trends such as digitization and personalized learning, along with challenges related to accessibility and digital literacy, demand further research and solutions. Based on the analysis of these aspects, it is possible to develop effective models and management methods to achieve sustainable development in education.

AIMS

The article aims to investigate and analyze contemporary models and methods of management in education with a focus on information technologies, sustainability, and development, as well as to develop recommendations for the practical implementation of modelling results.

The tasks of the article include:

- Analyzing modern models of management in education using information technologies.
- Examining issues of sustainability and development in educational systems in the context of information technology implementation.
- Studying and evaluating the impact of information technologies on the quality of education.

- Developing a management model in the education sector to ensure sustainable development.

METHODOLOGY

The study utilized a method of analyzing literature sources, encompassing contemporary scientific research findings and publications from both domestic and international authors. The article describes the descriptive method of literature analysis, which made it possible to highlight and describe the main elements of the research of leading domestic and foreign scientists, to accumulate the evidence developed in scientific research, in particular, ops analysis used for the analysis of sources, which represent in references. This comprehensive literature review aimed to gather insights and existing knowledge on the subject matter. Relevant statistical data were accumulated and meticulously selected to identify trends in educational development. This step involved collecting and curating data from various sources to establish a comprehensive dataset. The study conducted a thorough analysis of educational trends to discern the collective impact factors influencing developmental processes. This involved examining the patterns and trajectories of change within the education sector. Drawing from the insights gained through the analysis, the study employed modelling methods to develop an organizational management model within the education system. To obtain the results, the method of constructing a projection of statistical data of selected indicators of education development was used. The initial data for the analysis were selected by accumulating relevant indicators based on the results of UNESCO's statistical research. the projection line was built automatically by using MS Excel functions. The results matrix was developed using the method of constructing optimistic, realistic and pessimistic scenarios through least squares modeling. This model was designed to facilitate and ensure the sustainable development of the education sector (Ahmad, M.I., Benner, P. and Feng, L., 2019; Tenaglia, M. and Noonan, P., 1992). These methods collectively formed the foundation for the research, allowing for a holistic exploration of the topic and the development of practical recommendations. The methods of solving the debatable issues of the developed article can be called the following: round-table discussions with the participation of educators, politicians and technology experts to investigate the impact of information technologies on the quality of education, seminars devoted to the feasibility and effectiveness of educational management models with the integration of information technologies, interactive webinars for studying the influence of external factors (economic, socio-cultural and political changes) on the development of education, contributing to the discussion of the adaptation of educational systems to external changes, identifying potential opportunities and developing strategies to overcome the challenges caused by these influences.

LITERATURE REVIEW

The article "Social Management and Digital Communications as Important Components of Modern Higher Education" explores crucial aspects of management and the utilization of digital communication technologies in contemporary higher education. The article examines the role of digital communication technologies in higher education, which can be beneficial for our research, as it also emphasizes the role of information technologies in modern education. The article discusses the interplay between social management and digital communications, aiding in understanding how these two aspects can complement each other in the context of education. The article highlights current trends and challenges in the higher education sphere related to the use of digital communication technologies and management, which can provide valuable insights for our research, as we also investigate contemporary challenges in education. The article provides examples of models and management methods employed in modern higher education for the implementation of digital communications, which can serve as valuable information for our research. Overall, the article "Social Management and Digital Communications as Important Components of Modern Higher Education" has the potential to be beneficial for our research, as it can help expand our understanding of crucial aspects of management and the use of information technologies in education. We can utilize the findings of this article to substantiate and broaden our research and conclusions (Mialkovska L., et al., 2023).

The rapid evolution of mass media has made media literacy an essential skill in today's society. Teaching the language of mass media is crucial to prepare students for effective communication and critical thinking in a media-saturated world. However, traditional teaching methods may not fully address the dynamic nature of contemporary media. This article aims to explore the integration of digital tools in teaching the language of mass media and assess their impact on enhancing students' media literacy skills. The study investigates various aspects of utilizing digital tools in mass media language instruction, including the use

of video editing software, online media analysis platforms, and interactive multimedia content. The results highlight that the integration of digital tools can significantly enhance students' understanding of media language, promote critical analysis of media content, and foster effective communication skills within the context of mass media. The practical implementation of digital tools in teaching mass media language involves the incorporation of video editing software for hands-on media production experiences, the utilization of online media analysis platforms to analyze contemporary media content, and the creation of interactive multimedia lessons to engage students in active learning. These practices facilitate a dynamic and effective learning environment that aligns with the evolving nature of mass media language. This article contributes to the ongoing discourse on enhancing media literacy education through the innovative use of digital tools, ultimately preparing students to navigate the complexities of mass media language in the digital age (Mialkovska L., et al., 2023).

The field of comparative education faces ongoing challenges and evolving trends in the context of globalization and the changing landscape of education systems worldwide. Educators and researchers are confronted with complex issues related to curriculum design, pedagogical approaches, and the evaluation of educational systems across diverse cultural and socio-economic contexts. This article sets out to examine the current trends and issues in the teaching of comparative education, with a focus on identifying key challenges and opportunities in the field. The study aims to provide insights into the ways educators can adapt their teaching strategies to address these evolving trends effectively. The research identifies several trends, including the growing importance of internationalization in education, the emergence of digital technologies in comparative education research, and the need for a more inclusive and culturally sensitive approach to curriculum development. Additionally, the study highlights challenges such as navigating ethical considerations in cross-cultural research and addressing disparities in access to quality education globally. In conclusion, this article underscores the significance of staying abreast of evolving trends in the teaching of comparative education. It emphasizes the need for educators to adopt flexible and adaptive pedagogical approaches that consider the dynamic nature of education systems worldwide. Furthermore, it calls for increased collaboration among educators, researchers, and policymakers to address the challenges and leverage the opportunities presented by globalization and technological advancements in education (Kubow P. K. and Blosser A. H., 2014).

In the realm of comparative education, the intersection of ethics and the dynamics of post-communist countries remains a complex and underexplored area. The ethical dimensions of educational policies, practices, and outcomes in these transitional contexts pose unique challenges and opportunities for researchers and educators. This article aims to shed light on the current trends in ethics within the field of comparative education, with a specific focus on ex-communist countries. The study seeks to identify key ethical issues, dilemmas, and transformations that have emerged in the wake of political and socio-economic transitions. The research uncovers several significant trends, including the evolving role of ethics in shaping educational policies, the tension between global educational norms and local values, and the impact of historical legacies on ethical considerations in education. Additionally, the study reveals the importance of fostering ethical leadership and decision-making within educational institutions in post-communist contexts. In conclusion, this article highlights the pressing need to address ethical considerations in comparative education, particularly in ex-communist countries undergoing rapid transformations. It underscores the significance of incorporating ethical perspectives into research, policy formulation, and pedagogical practices to ensure equitable and morally sound educational systems. The study calls for further research and cross-cultural dialogue to navigate the evolving ethical landscape of education in these dynamic contexts (Ghiaţău R., 2016).

Sport entrepreneurship education has gained prominence in recent years as an emerging field, addressing the need for specialized training in the intersection of sports and entrepreneurship. However, there is a lack of comprehensive research on the effectiveness and impact of such educational programs. This article aims to explore the current landscape of sports entrepreneurship education, identify its key components, and assess its outcomes and relevance in preparing individuals for careers in the sports industry. The study seeks to provide insights into the challenges and opportunities associated with sports entrepreneurship education. The research reveals that sports entrepreneurship education programs vary widely in their content and delivery methods. While there is a growing demand for such education, there is a need for standardized curricula and evaluation frameworks. The study also highlights the positive impact of sports entrepreneurship education in fostering innovation, leadership, and business acumen among students. In conclusion, this article underscores the importance of sports entrepreneurship education as a means of bridging the gap between sports and business. It emphasizes the need for collaboration between

academic institutions, sports organizations, and industry stakeholders to develop comprehensive and effective programs. The study calls for further research and evaluation to refine the curricular design and assess the long-term impact of sports entrepreneurship education on the sports industry and entrepreneurial success (Ratten V. and Thukral E., 2020).

The field of education is experiencing significant transformations in the 21st century, marked by a growing emphasis on inclusive education. The inclusion of students with diverse needs, including those with disabilities, in general education settings presents both opportunities and challenges for educators, policymakers, and researchers. This article serves as an introduction to the broader discussion on general and special education inclusion in an era of educational change. The primary objective is to provide an overview of the evolving landscape of inclusive education, identify key issues and trends, and set the stage for further exploration in subsequent articles within the special issue. The article highlights the changing perspectives and paradigms surrounding inclusive education, including shifts from a deficit-oriented model to a strengths-based approach. It also outlines the importance of policy initiatives, teacher professional development, and collaboration among stakeholders in advancing inclusion efforts. In conclusion, this introductory article underscores the importance of recognizing and addressing the complexities of general and special education inclusion in the context of educational change. It serves as a foundation for subsequent articles within the special issue, which delve deeper into specific aspects of inclusive education and provide valuable insights for educators and researchers working in this evolving field (Bakken, J. P., 2016).

The field of special education has undergone significant transformations over the years, reflecting evolving societal perspectives, legislative changes, and educational practices. Understanding the historical context and foundational concepts of special education is essential for navigating its present complexities and shaping its future. This article serves as an introductory overview of the special issue, "Special Education Past, Present, and Future," aimed at exploring the historical roots, current challenges, and future directions of special education. The primary objective is to provide readers with a comprehensive understanding of the foundational concepts and key issues in the field. The article examines the historical evolution of special education, highlighting the shift from a deficit-based model to a more inclusive and individualized approach. It also discusses key concepts such as disability, inclusion, and equity and their significance in shaping special education practices. In conclusion, this introductory article underscores the importance of recognizing the historical context and foundational principles that have shaped special education. It sets the stage for the subsequent articles in the special issue, which delve deeper into specific topics related to special education, providing valuable insights for educators, researchers, and policymakers working in this dynamic field (Cook B. G., Landrum T. J. and Tankersley M., 2014).

The field of comparative and international education is facing a multitude of challenges and transformations in an increasingly interconnected world. Scholars and practitioners in this field must grapple with questions about its identity, relevance, and future directions. This article aims to engage in a thoughtful reflection on the current state of comparative and international education, with a focus on its identity and potential trajectories. The objective is to stimulate critical discourse and provide insights into the evolving nature of this field. The article discusses key issues surrounding the identity crisis of comparative and international education, including debates on terminology, interdisciplinary boundaries, and the impact of globalization. It explores the field's historical development and highlights emerging themes and trends. In conclusion, this article underscores the need for ongoing dialogue and introspection within the field of comparative and international education. It encourages scholars and practitioners to embrace change, foster interdisciplinary collaborations, and address pressing global challenges. The future of comparative and international education lies in its ability to adapt, innovate, and remain relevant in an ever-changing educational landscape (Popa S., 2016).

The field of adult education is complex and multifaceted, influenced by various factors, including cultural, social, economic, and political contexts. Understanding the diverse influences on adult education practices across different countries and regions is crucial for informed decision-making and policy development. This article seeks to provide a comparative analysis of the key areas of influence on adult education in various national contexts. The objective is to identify commonalities and differences, thus contributing to a deeper understanding of the dynamics shaping adult education policies and practices globally. The article presents an examination of the major influences on adult education, including government policies, socio-cultural factors, technological advancements, and the role of non-governmental organizations. It highlights the significance of context-specific approaches while also recognizing the importance of international cooperation and knowledge exchange. In conclusion, this article underscores

the need for a nuanced and context-specific understanding of adult education. It emphasizes that effective adult education policies and practices should be informed by both local realities and global perspectives. By recognizing the diverse areas of influence, stakeholders in adult education can develop more responsive and effective strategies to meet the evolving needs of adult learners worldwide (Holford J., Milana M. and Rasmussen P., 2018).

Comparative and international education (CIE) is a dynamic and ever-evolving field that encompasses a wide range of topics, approaches, and perspectives. The complexity and expansiveness of CIE pose challenges for both scholars and practitioners in terms of defining its boundaries and scope. This article serves as an introductory exploration of CIE, aiming to address the complexities and infinite possibilities within the field. The primary objective is to shed light on the diverse dimensions and emerging trends in CIE scholarship and practice. The article provides an overview of the multifaceted nature of CIE, highlighting its interdisciplinary character and its intersections with other fields of study. It emphasizes the importance of considering diverse voices, contexts, and methodologies within CIE research. The article also underscores the evolving nature of CIE in response to global educational transformations. In conclusion, this article underscores the infinite possibilities within the field of comparative and international education. It encourages scholars and practitioners to embrace the complexities and continuously explore new avenues of inquiry. By recognizing CIE as an ever-evolving and interdisciplinary field, stakeholders can better navigate its boundless terrain and contribute to meaningful advancements in global education (Wiseman A. W. and Wolhuter C. C., 2019).

The field of education faces a myriad of challenges and opportunities in the 21st century, requiring strategic frameworks and policies that can adapt to evolving global dynamics. The World Bank Group recognizes the importance of addressing these challenges and has formulated its Education Strategy 2020 as a response. This article aims to critically examine the World Bank Group's Education Strategy 2020, assessing its objectives, implementation, and impact on global education systems. It seeks to provide insights into the effectiveness and implications of this strategy. The article offers an in-depth analysis of the Education Strategy 2020, highlighting its key objectives, such as expanding access to quality education, enhancing learning outcomes, and fostering inclusive and equitable education. It evaluates the strategy's implementation across various regions and its influence on education policies and practices worldwide. Additionally, the article discusses the challenges and successes encountered during the strategy's execution. In conclusion, the World Bank Group's Education Strategy 2020 represents a significant effort to address the complex issues facing global education. While progress has been made in expanding access and improving learning outcomes, challenges persist, particularly in achieving equitable and inclusive education. The article underscores the need for continued evaluation and adaptation of education strategies to ensure they remain effective in an ever-changing world (Collins C. S. and Wiseman A. W., 2012).

The landscape of higher education is undergoing significant transformations driven by technological advancements, demographic shifts, and evolving societal needs. This article delves into the challenges and opportunities presented by this new frontier for higher education. The primary objective of this article is to explore the emerging trends and issues in higher education, considering the implications of digitalization, globalization, and changing student demographics. It aims to provide readers with a comprehensive understanding of the forces shaping the future of higher education. The article highlights key findings related to the changing higher education landscape. It discusses the impact of online learning and digital technologies on teaching and learning processes. Additionally, it addresses the challenges of ensuring access and equity in higher education in the face of demographic changes and globalization. The article also examines the role of universities in fostering innovation and addressing societal challenges. In conclusion, this article underscores the importance of adaptability and innovation in higher education institutions as they navigate the complexities of this new frontier. It emphasizes the need for strategic planning and collaboration to ensure that higher education continues to serve as a catalyst for individual growth and societal progress in an ever-evolving world (Wiseman A. W. and Anderson E., 2014).

The internationalization of education has become a prominent phenomenon in the context of globalization, prompting discussions about its impact on higher education systems and the need for a comprehensive understanding of the evolving landscape. This article aims to explore the multifaceted dimensions of internationalization in education, with a specific focus on Canada. It seeks to identify emerging issues and engage in discussions about the transformation of education into a globalized "business of knowledge." The article presents key findings related to the internationalization of education in Canada, emphasizing the increasing mobility of students and faculty, the role of transnational partnerships, and the challenges of ensuring cultural diversity and inclusivity. It highlights the need for universities to adapt to

the changing dynamics of international education and engage in strategic planning to remain competitive. In conclusion, this article underscores the importance of a nuanced understanding of the internationalization of education, as it presents both opportunities and challenges for Canadian higher education institutions. It calls for ongoing dialogues and collaborations to address emerging issues and navigate the evolving landscape of globalized education effectively (Shultz L., 2016).

The integration of comparative research into teacher education programs poses both challenges and opportunities in the evolving landscape of contemporary education. This article addresses the complexities associated with incorporating comparative research effectively. The primary objective of this article is to examine the challenges and opportunities involved in integrating comparative research methodologies into teacher education. It seeks to shed light on the evolving role of comparative research in shaping pedagogical practices and teacher preparation. The article presents key findings highlighting the challenges of adapting traditional teacher education models to incorporate comparative research effectively. It emphasizes the importance of cultivating a global perspective among teacher candidates and fostering cross-cultural competencies. Additionally, the article explores the opportunities for enriching teacher education through the incorporation of international perspectives and innovative pedagogical approaches. In conclusion, this article underscores the need for a paradigm shift in teacher education to embrace comparative research as a valuable tool for enhancing pedagogical practices. It advocates for ongoing professional development, cross-cultural collaborations, and the integration of global perspectives to prepare teachers who are better equipped to meet the diverse needs of students in contemporary educational settings (Collet B., 2014).

The field of comparative and international education has witnessed significant developments and transformations in recent years, necessitating a comprehensive review of its current status and emerging trends. This article serves as the Annual Review of Comparative and International Education for the year 2018. The primary objective of this article is to provide a comprehensive overview of the key issues, trends, and research findings in the field of comparative and international education for the year 2018. It aims to synthesize and analyze the most significant contributions to the field during this period. The article presents key findings from the review, highlighting the major themes, challenges, and developments in comparative and international education in 2018. It discusses the growing emphasis on global citizenship education, the impact of digital technologies on learning environments, and the evolving role of international assessments in shaping educational policies. In conclusion, this annual review underscores the dynamic nature of the field of comparative and international education. It recognizes the need for continued research, collaboration, and innovation to address the complex educational challenges of a rapidly changing global landscape. The article encourages scholars, policymakers, and practitioners to stay informed about the latest trends and insights in the field to drive positive educational change (Wiseman A. W., 2018).

The concept of inclusive education, which emphasizes the integration of students with diverse abilities into mainstream educational settings, has gained prominence in the field of comparative and international education. However, there is a need to examine the status of inclusive education as a special interest area within this research community. This article aims to explore the role and significance of inclusive education within the broader context of comparative and international education research. It seeks to analyze the current state of research, identify key themes, and assess the level of attention and engagement dedicated to inclusive education issues. The article presents key findings that highlight the growing interest in inclusive education research within the comparative and international education community. It identifies key themes such as policy analysis, teacher training, and the inclusion of marginalized groups as central areas of investigation. Additionally, it underscores the need for more cross-cultural and cross-national studies to enrich the discourse. Inclusive education has emerged as a special interest area of considerable importance within the field of comparative and international education. The article concludes that inclusive education research contributes significantly to addressing educational inequalities and promoting social justice on a global scale. It calls for continued research efforts, collaboration, and knowledge-sharing among scholars and practitioners to advance the inclusive education agenda worldwide (Kiuppis F. and Peters S., 2014; Moravec J. W. and Martínez-Bravo M. C., 2023).

The landscape of teacher education is profoundly impacted by globalization, transcending the boundaries of the nation-state. In this context, the field of comparative and international education plays a vital role in shaping teacher development. However, the extent and significance of this influence remain subjects of inquiry. This article seeks to investigate the nexus between teacher education, the nation-state, and the field of comparative and international education. Its primary objective is to analyze how comparative and international education matters in the context of teacher development, considering the challenges posed by globalization. The article presents key findings that underscore the relevance of

comparative and international education in shaping teacher education policies, practices, and curricula. It highlights the importance of cross-border collaboration and knowledge exchange among educators and policymakers. Furthermore, it identifies the tensions between national agendas and global educational trends as a significant challenge. Comparative and international education plays a pivotal role in teacher development, transcending the confines of the nation-state. The article concludes that a nuanced understanding of this relationship is essential for addressing the challenges and opportunities posed by globalization in teacher education. It calls for continued research and dialogue to inform teacher education policies and practices in an increasingly interconnected world (Wiksten S., 2019).

Higher education in developing countries faces multifaceted challenges, including limited resources, increasing demand, and the need to align with global educational standards. These challenges necessitate a reevaluation of higher education investment strategies in such contexts. This article aims to explore the problematics of higher education investment in developing countries and proposes a rethinking of existing approaches. The primary objective is to provide insights into how investment strategies can better address the unique needs and circumstances of higher education systems in these regions. The article presents key findings that highlight the importance of tailored investment strategies for higher education in developing countries. It emphasizes the need for a holistic approach that considers infrastructure development, curriculum design, faculty capacity building, and technology integration. The findings also underscore the significance of partnerships between governments, international organizations, and educational institutions in achieving sustainable progress. Rethinking higher education investment is imperative for ensuring the quality, accessibility, and relevance of education in developing countries. The article concludes that a comprehensive and adaptable investment framework, coupled with collaborative efforts, can pave the way for transformative changes in higher education systems. It calls for continued research and innovative solutions to address the evolving challenges faced by these nations in the field of higher education (Peercy C. and Svenson N., 2018).

The field of comparative and international education is marked by a myriad of contradictions, including its diverse methodologies, complex theoretical frameworks, and the challenge of reconciling global and local perspectives. These contradictions have implications for the development and evolution of the field. This article aims to elucidate the contradictions within the field of comparative and international education and explore how these contradictions influence its trajectory. The primary objective is to provide a comprehensive analysis of these tensions and their impact on research, policy, and practice. The article presents key findings that highlight the inherent contradictions within the field, such as the tension between universality and contextuality, the dual role of researchers as advocates and analysts, and the challenge of maintaining a balance between critical inquiry and practical application. It underscores how these contradictions contribute to the dynamic nature of the field and its innovation potential. Comparative and international education's contradictions are not impediments but rather sources of vitality and relevance. The article concludes that embracing these tensions can lead to richer scholarship, more nuanced policy recommendations, and more effective educational practices. It calls for continued reflection and engagement with these contradictions as a means of advancing the field's contributions to global education (Elfert M. and Monaghan C., 2019).

The field of comparative and international education has been historically dominated by perspectives from the Global North, which has led to a limited representation of voices and experiences from the Global South. This imbalance raises questions about the authenticity and relevance of research and policy recommendations. This article sets out to address the imperatives of comparative and international education from a Southern perspective. It aims to shed light on the unique challenges and opportunities faced by scholars, educators, and policymakers in the Global South, emphasizing the importance of inclusive and contextually relevant approaches. The article presents key findings that underscore the need for a more equitable and inclusive framework in comparative and international education. It highlights the value of Southern voices and experiences in shaping the field, as well as the importance of addressing context-specific challenges. The findings emphasize the importance of collaborative partnerships between the Global North and South. The article concludes that the imperatives of comparative and international education require a shift towards greater inclusivity, diversity, and recognition of Southern perspectives. It calls for a more balanced and reciprocal exchange of knowledge and practices between regions. Embracing these imperatives can lead to a more equitable and effective global education landscape (Batra P., 2018).

The refugee crisis in Europe has presented significant challenges in providing education to displaced populations, highlighting the need to rethink existing principles, policies, and practices in refugee education. This article addresses these challenges from a European perspective. The article's objective is to critically

examine the principles, policies, and practices of refugee education in Europe and propose a rethinking of approaches to better meet the educational needs of refugees. It aims to provide insights for policymakers, educators, and stakeholders involved in refugee education. The article presents key findings that highlight the shortcomings of current refugee education policies and practices in Europe. It emphasizes the importance of inclusive, culturally sensitive, and context-specific approaches to refugee education. The findings also stress the need for greater collaboration among European countries and institutions. In conclusion, the article argues for a rethinking of refugee education in Europe, with a focus on principles of inclusivity, flexibility, and adaptability to diverse refugee populations. It underscores the importance of viewing refugee education as a long-term investment in the future of displaced individuals and the societies that host them. Rethinking refugee education is essential for promoting social integration, economic participation, and the well-being of refugees in European countries (de Wal Pastoor L., 2016).

The manufacturing industry is undergoing a profound transformation due to digitalization, and there is a pressing need to understand how education and training systems can adapt to support a digitally-enabled workforce for the industry of the future. This article sets out to explore the challenges and opportunities in aligning education and training systems with the evolving needs of the manufacturing sector in the digital age. The primary goal is to identify strategies and recommendations for bridging the skills gap and fostering workforce readiness. The study reveals that current education and training systems often lag in providing the digital skills required by the manufacturing industry. However, it also identifies promising initiatives and best practices that demonstrate the potential for improvement. Key findings emphasize the importance of industry-academic partnerships, flexible learning pathways, and upskilling/reskilling programs. In conclusion, the article underscores the urgency of reimagining education and training systems to meet the demands of the future manufacturing workforce. It advocates for a more dynamic and collaborative approach that involves industry stakeholders, educational institutions, and policymakers. The transition to a digitally-enabled manufacturing industry necessitates proactive measures to ensure that the workforce is adequately prepared, ultimately contributing to economic growth and competitiveness (Laundon M., McDonald P. and Greentree J., 2023).

Sustainable architecture is a field of increasing significance in response to global environmental challenges. This article addresses the current status of education and research in sustainable architecture and the need to assess its progress and future direction. The primary objective of this article is to critically examine the state of education and research in sustainable architecture. It aims to identify gaps, trends, and areas of growth, providing insights into where the field stands and where it should be heading. The study presents a comprehensive analysis of the evolution of sustainable architecture education and research over the years. It highlights the growing interest and importance of sustainability in architectural practice. Key findings reveal a need for interdisciplinary approaches, increased collaboration between academia and industry, and a stronger emphasis on practical applications of sustainable design principles. In conclusion, this article emphasizes the pivotal role of education and research in advancing sustainable architecture. It underscores the importance of integrating sustainability into architectural curricula and fostering research that addresses real-world challenges. The field of sustainable architecture has made significant strides, but continued innovation, collaboration, and adaptation are essential to address pressing environmental concerns and shape a sustainable future in the built environment (Sheta W., 2023).

RESULTS

The article explores the issues of sustainability and development in educational systems in the context of information technology implementation through the following steps – Figure 1.

Studying and evaluating the impact of information technologies on the quality of education is a crucial endeavour in today's rapidly evolving educational landscape. With the widespread integration of digital tools and resources into educational settings, it has become essential to assess how these technologies influence the overall quality of learning and teaching.

One significant aspect of this examination involves analyzing how information technologies enhance the accessibility and flexibility of education. Online learning platforms, digital textbooks, and interactive educational software have made it possible for learners to access educational materials and resources from anywhere, at any time. This flexibility caters to diverse learning styles and preferences, potentially improving the overall quality of education by accommodating individual needs.

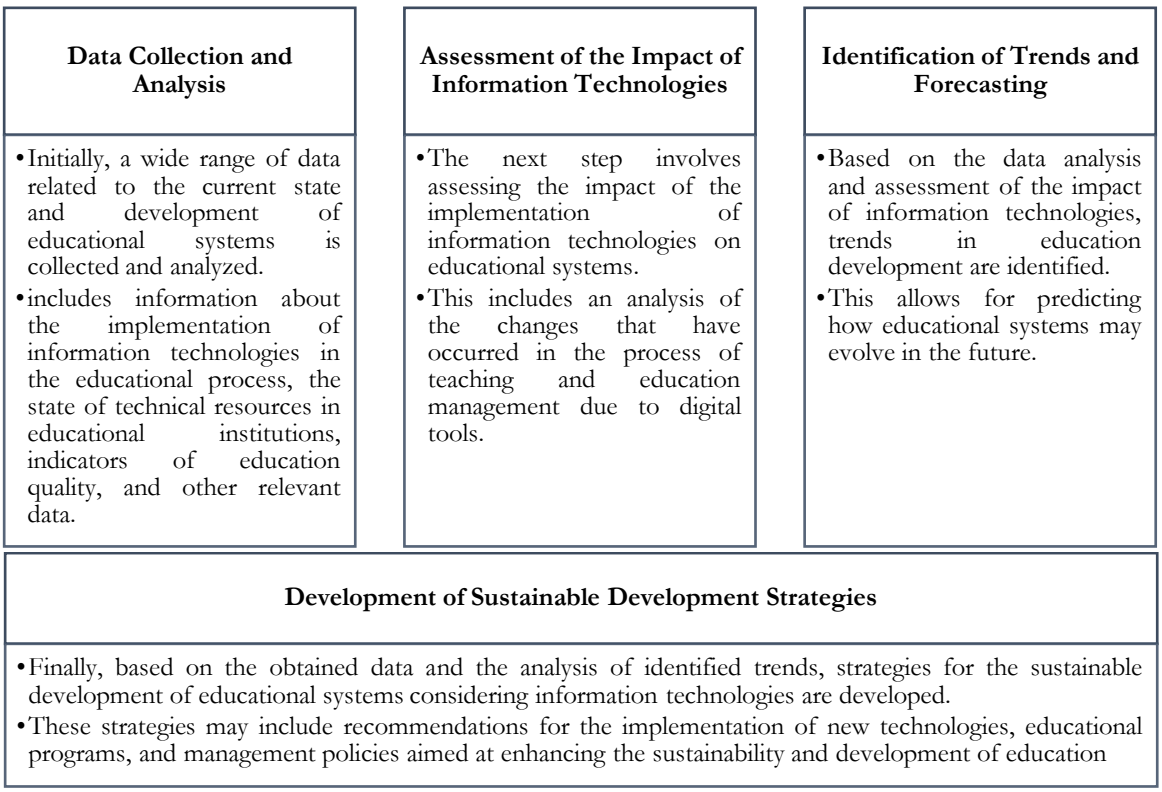

Figure 1. Steps for information technology implementation.
Source: compiled by the author.

Furthermore, the role of information technologies in personalized learning deserves attention. Adaptive learning algorithms and data analytics enable educators to tailor instruction to student's specific strengths and weaknesses. This level of customization can lead to more effective learning experiences, better retention of knowledge, and improved overall educational quality.

Another critical dimension to consider is the engagement and interactivity that information technologies bring to education. Gamified learning environments, virtual reality simulations, and collaborative online tools create immersive and participatory experiences for students. These interactive elements can enhance student motivation, participation, and comprehension, contributing to the overall quality of education.

However, it is essential to acknowledge potential challenges and drawbacks associated with the use of information technologies in education. Issues related to the digital divide, data privacy, and the quality of online resources must be addressed to ensure that technology's impact on education is positive and equitable.

In conclusion, studying and evaluating the impact of information technologies on the quality of education is a multidimensional task that encompasses accessibility, personalization, engagement, and addressing potential challenges. As technology continues to shape the future of education, ongoing research and assessment are crucial to ensure that it consistently enhances the quality of learning and teaching.

These steps provide a deeper understanding of the relationship between information technologies and the sustainability and development of educational systems, offering a basis for the development of specific recommendations within the context of the researched problem.

Based on the analysis of statistical data, a projection of educational indicators' trend development has been developed, taking into account the influence of external factors, including digitization processes - Figure 2.

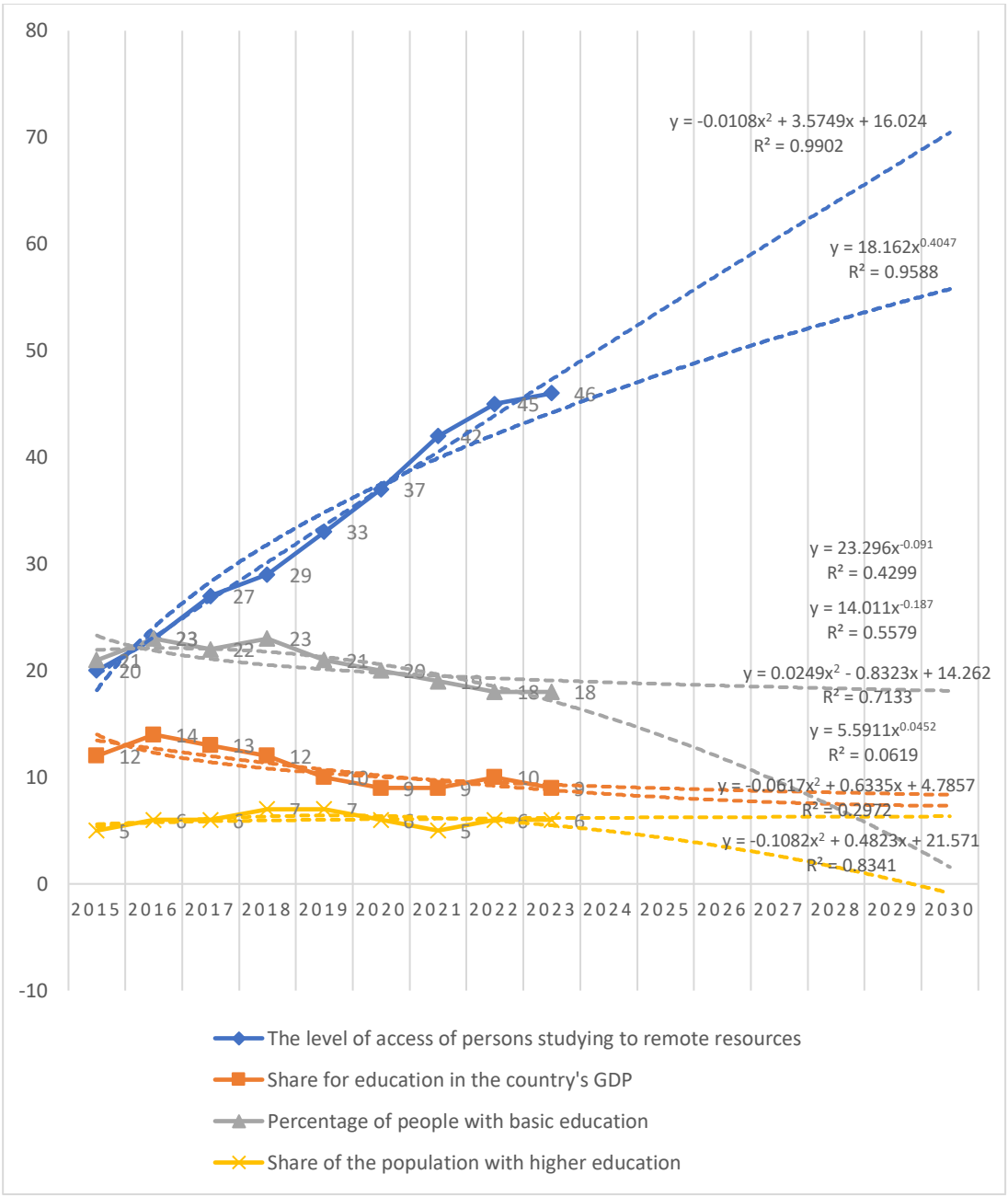

Figure 2. Trendline of educational indicators' development. Source: developed by the author based on the analysis of statistical data (UNESCO) and trendline calculation.

A trend line has been formulated indicating that by 2030, the level of education will return to pre-quarantine levels. This trend line is constructed in two ways - the positive and the optimal scenarios. The positive scenario assumes the absence of negative external influences, while the optimal scenario takes into account how the indicators will behave in the presence of negative external factors. Table 1 displays projections of the impact results of various factors.

The parameters are developed taking into account three quadratic deviations of the difference between the optimistic and realistic scenarios. The matrix for evaluating results allows for determining the assessment results for each indicator based on the developed parameters, thereby defining the positive and optimal scenarios for the education system's development under variable factors.

The research results indicate that the implementation of the developed model for managing digital processes in education can be both practical and beneficial for enhancing the quality of education and ensuring its sustainability and development. For the practical implementation of this model, the following steps are recommended:

- Infrastructure analysis: firstly, a comprehensive analysis of the technical and information infrastructure of educational institutions is necessary, including an evaluation of existing equipment and software.
- Needs assessment: determining the needs of educational institutions, teachers, and students for digital resources, educational programs, and other tools is essential.
- Development of implementation plan: based on the analysis and identified needs, an implementation plan for the model of managing digital processes should be established. This plan should include the necessary steps, timelines, and resources required for execution.
- Staff training: educational staff and administration should be prepared for the utilization of the new management model. Conducting training sessions and workshops can be valuable for ensuring a successful implementation.
- Monitoring and evaluation: after implementing the model, systematic monitoring and evaluation of its effectiveness are crucial. This helps in promptly identifying issues and making necessary adjustments.
- Continuous improvement: it is essential to view the model as a dynamic process and continuously refine it based on the obtained results and changes in the field of education.

To achieve the outcomes, the approach employed involved creating a representation of statistical data related to specific education development indicators. The primary dataset for examination was compiled by aggregating pertinent indicators derived from UNESCO's statistical investigations. The projection curve was automatically generated utilizing MS Excel functions. The outcome matrix was formulated using a technique that constructs optimistic, realistic, and pessimistic scenarios through the application of least squares modeling.

Table 1. The matrix of the projection of influencing factors on positive and optimal scenarios.

Indicators	Positive scenario	Optimal scenario	Parameter
The level of access of persons studying to remote resources	4,0	2,4	$\pm\sqrt[3]{2{,}4 \pm 4{,}0}$
Share for education in the country's GDP	2,8	1,6	$\pm\sqrt[3]{1{,}6 \pm 2{,}8}$
Percentage of people with basic education	1,8	0,7	$\pm\sqrt[3]{0{,}7 \pm 1{,}8}$
Share of the population with higher education	1,8	0,8	$\pm\sqrt[3]{0{,}8 \pm 1{,}8}$

The implementation of the developed model for managing digital processes can contribute to the improvement of education and ensure its sustainability and development by facilitating a more effective integration of information technologies into the educational process.

PRACTISE IMPROVING

Actively incorporate information technologies into the curriculum at all educational levels, ensuring that students are exposed to modern tools and resources that enhance the learning experience. Provide ongoing training and professional development opportunities for educators to ensure they are well-versed in utilizing information technologies. This includes workshops, seminars, and online courses focusing on the effective integration of technology in teaching. Create dedicated learning spaces equipped with state-of-the-art technology to facilitate hands-on experience for students.

These centers can serve as hubs for innovation, collaborative projects, and exploration of cutting-edge educational tools. Encourage educational institutions to adopt data-driven decision-making processes based on the statistical insights and trends identified in the research. This involves using data analytics tools to assess the effectiveness of educational strategies and make informed adjustments.

Collaborate with policymakers to develop and implement sustainable education policies that emphasize the integration of information technologies. These policies should reflect the research findings and aim to create an environment conducive to the long-term development of the education sector. Foster collaborations between educational institutions and the technology industry to ensure access to the latest advancements. Partnerships can include internship programs, joint research projects, and sponsorship of educational initiatives to bridge the gap between academia and industry.

Establish innovation hubs within educational institutions to encourage students and educators to explore, experiment, and implement innovative solutions. These hubs can serve as incubators for educational technology startups and projects. Implement a system for continuous monitoring and evaluation of the effectiveness of the integrated information technologies. This involves regular assessments, feedback mechanisms, and adjustments to ensure that the adopted strategies align with the goals of sustainable education development.

Create platforms for knowledge exchange among educators, researchers, and policymakers. This can involve organizing conferences, webinars, and collaborative forums where stakeholders can share experiences, best practices, and insights on implementing information technologies in education. Advocate for the importance of technological literacy as a fundamental skill for students. Collaborate with education boards and institutions to integrate technology-focused subjects into the curriculum, ensuring that students graduate with the necessary skills for the modern workforce.

DISCUSSION

The research presented in the article raises several discussion points that can be significant for further deliberations and investigations:

- One of the key themes of the research is the impact of information technologies on the quality of education. The discussion can revolve around how technology can enhance educational processes and how to ensure the quality and efficiency of its implementation.
- The research examines models of education management considering information technologies. The discussion may centre on the feasibility and effectiveness of such models, as well as the challenges associated with ensuring their sustainability.
- The research highlights the issue of inequality in access to digital education. It is essential to discuss ways to reduce this inequality and enhance digital literacy among both teachers and students.
- The research takes into account external factors that can influence educational development. The discussion may focus on how economic, socio-cultural, and political changes can impact educational systems.
- The research utilizes models to forecast educational development. It is crucial to discuss the accuracy of these models and the effectiveness of strategies based on their outcomes.
- The research acknowledges contemporary challenges in education related to digital technologies. The discussion can explore how these challenges can become opportunities for further educational advancement.
- These discussion points provide a platform for further research and dialogues in the field of education management and the utilization of information technologies in education.

CONCLUSION

In the conclusions of this article, it is imperative to consider their purpose, which is to summarize the key findings of the conducted analysis and formulate essential recommendations for further work in the field of management and the utilization of information technologies in education. Throughout the research process, various aspects of implementing information technologies in the educational sector were examined, including their impact on the quality of education, management models, inequality in access, and other critical issues. It was noted that information technologies can unlock new opportunities for improving teaching and the management of educational systems. The results of the analysis indicate that the implementation of information technologies has the potential to enhance the quality, sustainability, and development of education. The initial step in introducing information technologies should involve a comprehensive analysis of the technical and information infrastructure of educational institutions. It is crucial to determine the needs of educational institutions, teachers, and students in terms of digital resources and educational programs. Based on the analysis and identified needs, a detailed plan for implementing

information technologies into the education system should be developed. All educational staff and administration must be adequately prepared to utilize the new management model and information technologies effectively. After implementation, continuous monitoring and evaluation of the model's effectiveness are necessary to make timely adjustments. The management model should be perceived as a dynamic process, constantly evolving based on obtained results and changes in the field of education. These recommendations represent vital steps toward the successful implementation of information technologies in the education sector and the achievement of sustainable development in this field. Research and the development of information technologies in education are integral components of the modern educational process and can contribute significantly to improving the quality of learning and increasing access to education for all.

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