



Original Research

Theoretical Approaches to Equitable and Sustainable Curriculum Design in Post-Pandemic Education in Jordan

Sam Ramaila, University of Johannesburg, South Africa

Thasmai Dhurumraj, University of Johannesburg, South Africa

Hena Ahmed Iraqui, The International Open University, The Gambia

Received: 10/27/2024; **Accepted:** 04/10/2025; **Published:** 07/09/2025

Abstract: This article examines the theoretical frameworks crucial for developing equitable and sustainable curriculum designs in the context of post-pandemic education in Jordan. The COVID-19 pandemic has amplified existing disparities within the education system, underscoring the urgent need for curriculum reforms that prioritize inclusivity and resilience. This study explores key theoretical approaches—constructivism, social justice pedagogy, and systems thinking—as foundational pillars for designing curricula that meet diverse learner needs and ensure equitable access to educational opportunities. By integrating these frameworks, the article proposes actionable strategies for educators and policymakers to enhance curriculum development, creating an educational environment that is not only responsive to current challenges but also adaptable for future generations. In conclusion, this research highlights the importance of theoretical foundations in shaping educational practices that pave the way for a more equitable and sustainable educational system in Jordan.

Keywords: Curriculum Design, Equity in Education, Post-Pandemic Education, Jordanian Education System, Social Justice Pedagogy

Introduction

The COVID-19 pandemic has profoundly reshaped educational systems worldwide, exposing deep vulnerabilities and inequities within existing structures. In Jordan, the impact of the pandemic was particularly severe, amplifying pre-existing challenges in the education sector, such as overcrowded classrooms, limited resources, and significant disparities in access to technology. These challenges left many students at a disadvantage, especially those from marginalized communities, including refugee populations, rural girls, and students with disabilities (Presler-Marshall et al. 2023). As the education system works to recover and rebuild, it becomes evident that there is an urgent need for curricula that are both equitable and sustainable to address these disparities and ensure that all learners can thrive in a rapidly changing world.

Curriculum development plays a critical role in shaping educational outcomes, especially during crisis. Equitable curriculum design is grounded in the principle that all students, regardless

of their socioeconomic background, gender, or geographic location, should have access to high-quality educational opportunities (Ainscow 2020). This principle has become even more significant in the post-pandemic context, as schools work toward overcoming learning losses and promoting a sense of belonging for students who may have experienced isolation during extended periods of remote learning. Sustainable curriculum design, on the other hand, focuses on ensuring that educational practices are resilient, adaptable, and capable of addressing long-term challenges, including environmental, social, and economic factors (Hays and Reinders 2020). It encourages an approach that not only prepares students academically but also equips them with the skills to navigate and contribute to a sustainable future.

In Jordan, the need for an inclusive, resilient, and future-ready curriculum is more pressing than ever. This article aims to explore the theoretical frameworks that can guide the development of such curricula, focusing on constructivism, social justice pedagogy, and systems thinking as central pillars for reform. Constructivism emphasizes learner-centered, active engagement, and critical thinking (Chand 2023), while social justice pedagogy advocates for the inclusion of marginalized voices and perspectives, aiming to address systemic inequalities (Hart 2019). Systems thinking, with its holistic view of education, recognizes the interconnections between various stakeholders, including educators, students, and policymakers, and situates education within the broader socioeconomic and political context (Arnold and Wade 2015).

The primary purpose of this research is to examine how these theoretical approaches can inform the design of an equitable and sustainable curriculum in Jordan's post-pandemic educational landscape. Specifically, the research objectives are as follows:

1. to analyze the role of constructivist principles in fostering active, student-driven learning environments.
2. to explore how social justice pedagogy can address inequities within the Jordanian education system, particularly for marginalized groups.
3. to assess the potential of systems thinking to create a more interconnected and adaptive curriculum that meets the needs of diverse learners.

The significance of this study lies in its potential to contribute to the ongoing discourse surrounding education reform in Jordan. By integrating theoretical frameworks into curriculum development, the study aims to provide actionable insights that can guide policymakers, educators, and curriculum designers in creating a more inclusive, resilient, and sustainable education system. The findings will be of value to those involved in educational planning and reform efforts in Jordan, offering practical recommendations that align with the broader goals of equitable access, social justice, and sustainability.

In the sections that follow, we will explore each of these theoretical frameworks in greater detail, discuss their implications for curriculum design, and propose concrete strategies that

can be employed to build a more inclusive and effective educational environment in Jordan's post-pandemic context. Ultimately, this research seeks to inform and inspire meaningful change that will empower learners and equip them with the skills and knowledge necessary to navigate the complexities of the modern world.

Background on the Educational Landscape in Jordan

Jordan's education system has historically been characterized by a commitment to universal access to education, with high enrollment rates in primary and secondary schools (Benson 2020). However, despite these achievements, the system has faced persistent challenges, particularly concerning educational equity and quality. The onset of the COVID-19 pandemic in early 2020 significantly impacted the educational landscape, exacerbating existing inequities and introducing new challenges for students, teachers, and educational institutions (Pokhrel and Chhetri 2021). The pandemic forced a rapid transition to remote learning, as schools closed their doors to prevent the spread of the virus. While this shift was a necessary public health measure, it revealed deep divides in access to technology and the internet, particularly among marginalized populations (Budd et al. 2020). Many students, especially those in rural areas or from low-income families, lacked the necessary resources to engage in online learning (Sing Yun 2023). According to a report by UNICEF, about 85% of students in Jordan had access to the internet, but this figure masked the disparities faced by disadvantaged groups. Students with disabilities, those living in refugee camps, and families with limited financial means found it particularly difficult to participate in virtual education, leading to significant learning losses and increased educational inequities.

The abrupt transition also placed immense pressure on teachers, many of whom were unprepared for remote instruction. Although many educators displayed remarkable resilience and adaptability, their lack of professional development and training in digital pedagogy hindered their ability to effectively engage students in a remote learning environment (Salinas and Garrido 2022). Consequently, the quality of education varied widely, with some students receiving little to no instruction during prolonged periods of school closures. As schools reopened, educators faced the dual challenge of addressing the significant learning gaps that had emerged during the pandemic while also fostering a safe and supportive learning environment. Marginalized populations, including refugee children, girls, and students from low-income households, encountered heightened barriers to educational attainment (Cooc and Kim 2023). For instance, refugee children in Jordan—who comprise a substantial proportion of the student population—often experience disrupted learning due to social, economic, and emotional challenges (Khater 2023). Access to educational resources, language barriers, and a lack of psychosocial support further complicate their integration into the formal education system (Cele 2021).

In the face of these challenges, the need for an equitable and sustainable curriculum design has never been more urgent. The educational inequities exacerbated by the pandemic require a comprehensive approach that not only addresses the immediate needs of marginalized populations but also lays the groundwork for a more inclusive and resilient educational system in Jordan. As educators and policymakers seek to navigate this complex landscape, it is essential to understand the multifaceted nature of these challenges and the theoretical frameworks that can inform effective curriculum design. By addressing the root causes of inequity and prioritizing sustainable practices, Jordan's education system can emerge stronger and more equitable in the post-pandemic era.

Purpose of the Article

This article seeks to explore and analyze theoretical frameworks that can effectively guide the design of curricula aimed at promoting equity and sustainability in the educational landscape of Jordan, particularly in the aftermath of the COVID-19 pandemic. The pandemic has illuminated the systemic inequities entrenched within the education system, which have disproportionately affected marginalized populations, including refugee students, children from low-income households, and those with disabilities. In this context, it is imperative to develop curricula that are not only responsive to the immediate needs of these diverse student groups but also adaptable to future challenges. To achieve this goal, the article investigates various theoretical approaches to curriculum design that emphasize inclusive practices and sustainable educational outcomes. Theoretical frameworks such as constructivism, social justice pedagogy, and systems thinking will be examined for their potential to address the inequities that have been exacerbated by the pandemic. Each framework offers unique insights and methodologies that can inform educators and policymakers in creating curricula that prioritize the needs of all learners, especially those who have been historically marginalized.

By synthesizing these theoretical perspectives, the article aims to provide a comprehensive understanding of how equitable and sustainable curriculum design can contribute to a more just education system in Jordan. Furthermore, the article underscores the importance of collaboration among educators, community stakeholders, and policymakers in fostering an inclusive educational environment. Through the lens of these theoretical approaches, the article will offer practical recommendations for curriculum development that not only address the immediate post-pandemic challenges but also lay a foundation for long-term educational resilience and equity. Ultimately, this exploration underscores the critical role that theoretical frameworks can play in guiding the transformation of Jordan's education system. By prioritizing equity and sustainability in curriculum design, educators can create learning environments that empower all students to thrive, thereby contributing to a more equitable and prosperous society in the post-pandemic era.

Significance of the Study

The study holds significant implications for educational policy and curriculum development in Jordan, particularly in light of the challenges exposed and exacerbated by the COVID-19 pandemic. As the educational landscape undergoes a necessary transformation to address the inequities that have long existed within the system, this research aims to provide critical insights and recommendations that can inform and enhance policy frameworks at both local and national levels. First and foremost, the study contributes to the ongoing dialogue surrounding educational equity in Jordan by highlighting the pressing need for curricula that are inclusive and responsive to the diverse needs of all students, particularly marginalized populations such as refugees, low-income families, and students with disabilities. By employing theoretical frameworks such as constructivism, social justice pedagogy, and systems thinking, the research offers a nuanced understanding of how these concepts can be translated into actionable strategies for curriculum development. This contribution is particularly timely as educational leaders and policymakers seek to create curricula that not only recover from the disruptions caused by the pandemic but also build a more equitable and resilient educational system.

Furthermore, the study's findings can serve as a resource for policymakers in identifying gaps in current curriculum frameworks and addressing systemic barriers that impede equitable access to quality education. By advocating for the integration of equity and sustainability principles into curriculum design, this research emphasizes the necessity for comprehensive policy reforms that prioritize educational inclusivity and long-term sustainability. Such reforms are crucial not only for ensuring that all students have access to high-quality educational experiences but also for fostering a sense of belonging and empowerment among marginalized groups. Additionally, the study's insights may inspire collaboration among various stakeholders, including educators, community organizations, and government entities, to create a unified approach toward curriculum development that aligns with the principles of equity and sustainability. By engaging these stakeholders in meaningful dialogue and collaboration, the study aims to foster a collective commitment to transforming the educational landscape in Jordan.

Ultimately, the significance of this study lies in its potential to inform and shape educational policies that prioritize equity and sustainability in curriculum design. By addressing the systemic inequities exacerbated by the pandemic and proposing theoretical approaches that promote inclusive practices, this research aspires to contribute to a more just and resilient education system in Jordan, where every student can succeed and thrive.

The Context of Education in Jordan Post-Pandemic

The COVID-19 pandemic has profoundly impacted the educational landscape in Jordan, revealing and exacerbating existing challenges while also presenting opportunities for reform (Harmey and Moss 2021). As schools transitioned to remote learning in response to the

pandemic, significant obstacles emerged, particularly concerning access to technology and the efficacy of remote learning methods. Many students faced barriers in accessing digital devices and reliable internet connections, particularly in rural and low-income urban areas (Livingston et al. 2023). These disparities created an inequitable educational experience, where some students could continue their studies with minimal disruption, while others fell far behind. The shift to online education not only highlighted the digital divide but also resulted in considerable learning losses, especially among vulnerable populations, including refugees, students with disabilities, and those from economically disadvantaged backgrounds (Van de Werfhorst et al. 2022). Research indicates that these groups experienced significant disruptions in their educational progress, leading to a widening achievement gap that jeopardizes their long-term academic and social outcomes (Wills and van der Berg 2024). These disparities underscore the urgent need for curriculum designs that address the unique challenges faced by these demographics, ensuring that every student has equitable access to quality education, regardless of their circumstances.

In response to these challenges, the current curriculum design practices in Jordan have come under scrutiny. The existing curriculum frameworks, which largely rely on traditional, teacher-centered pedagogies, have been found inadequate in addressing the diverse needs of learners (Abedi 2024). The inflexible nature of these curricula often fails to accommodate different learning styles, cultural backgrounds, and individual capabilities, leaving many students disengaged and underserved (Vreuls et al. 2025). Moreover, the emphasis on standardized testing and rote memorization limits the development of critical thinking and problem-solving skills, essential competencies in today's rapidly changing world (Mitani 2021). Additionally, the existing curriculum frameworks have not adequately integrated technology as a tool for learning (Ramorola 2013). While there have been efforts to enhance digital literacy among students and teachers, the lack of a cohesive strategy for incorporating technology into the curriculum remains a significant barrier (Falloon 2020). This limitation became glaringly evident during the pandemic when the abrupt shift to online learning highlighted the necessity for a curriculum that is both adaptable and responsive to technological advancements.

As Jordan navigates the post-pandemic educational landscape, it is imperative to critically assess these existing practices and seek innovative approaches to curriculum design. This reassessment is crucial not only for addressing the immediate challenges posed by the pandemic but also for building a more equitable and sustainable educational framework that meets the diverse needs of all learners. The context of education in Jordan, shaped by the lessons learned during the pandemic, calls for a shift toward more inclusive and flexible curriculum designs that prioritize equity, accessibility, and the holistic development of students. By means of such a shift, Jordan can pave the way for a more resilient education system capable of withstanding future challenges while fostering the growth of all its learners.

Theoretical Frameworks for Curriculum Design

Constructivism

Constructivism is a learning theory that posits that knowledge is actively constructed by learners rather than passively received from teachers (Chand 2023). This theory emphasizes the importance of learners' prior knowledge and experiences in the learning process. In the context of curriculum design, constructivist principles advocate for educational frameworks that prioritize student agency, collaborative learning, and real-world applications of knowledge (Booyse and Chetty 2016). By fostering an environment where students can engage in inquiry-based learning and problem-solving activities, educators can create opportunities for deeper understanding and retention of knowledge. The implications of constructivism for student engagement are profound. When learners are actively involved in their education, they are more likely to be motivated, retain information, and develop critical thinking skills. Constructivist curricula often incorporate hands-on activities, group projects, and discussions that encourage students to explore concepts collaboratively (Chand 2023). This active learning approach not only makes learning more enjoyable but also empowers students to take ownership of their education, promoting a sense of agency and responsibility. As a result, constructivism aligns well with the goals of equitable and sustainable curriculum design, as it seeks to engage all learners by valuing their unique perspectives and experiences.

Social Justice Pedagogy

Social justice pedagogy encompasses a range of theories aimed at addressing inequalities within the educational system (Hart 2019). It emphasizes the need for education to be a tool for social change, advocating for a curriculum that reflects diverse perspectives and experiences. In practice, social justice theories urge educators to critically examine their own biases and the structures that perpetuate inequities in education (Ives and Nygreen 2024). By integrating social justice principles into curriculum design, educators can create learning environments that not only acknowledge but also celebrate diversity. Strategies for fostering equity and inclusion in the curriculum include incorporating culturally relevant materials, implementing diverse teaching methods, and actively promoting discussions around social issues. By engaging students in critical dialogues about race, class, gender, and other forms of inequality, educators can encourage empathy and understanding while equipping students with the tools needed to navigate and challenge injustices in society. This commitment to equity within the curriculum ensures that all students, particularly those from marginalized backgrounds, feel valued and empowered in their learning journey.

Systems Thinking

Systems thinking is an approach that emphasizes understanding the complex interrelationships between various components within an educational system (Arnold and Wade 2015). In the

context of curriculum design, systems thinking encourages educators to consider the broader implications of their decisions and to recognize that changes in one area can affect multiple facets of the educational experience (Arnold and Wade 2015). This holistic perspective is crucial for developing curricula that are responsive to the diverse needs of learners and the contexts in which they are situated. The importance of systems thinking lies in its ability to foster comprehensive and integrated approaches to curriculum design (Spain 2019). By considering factors such as cultural contexts, student backgrounds, available resources, and community needs, educators can create curricula that are not only effective but also sustainable. This approach encourages collaboration among stakeholders, including teachers, administrators, parents, and community members, to ensure that educational initiatives are aligned with the values and aspirations of the broader community. By adopting a systems thinking perspective, Jordanian educators can develop curricula that promote equity and sustainability, ultimately enhancing educational outcomes for all students in the post-pandemic landscape.

In summary, these theoretical frameworks—constructivism, social justice pedagogy, and systems thinking—provide valuable insights into the design of equitable and sustainable curricula in Jordan's post-pandemic education. By integrating these approaches, educators can create learning environments that are inclusive, engaging, and responsive to the needs of all learners.

Integrating Theoretical Approaches in Curriculum Design

Balancing Essentialism and Reconstructivism

In the realm of curriculum design, the interplay between essentialism and reconstructivism offers a dynamic framework for creating educational experiences that are both foundational and transformative. Essentialism emphasizes the importance of a core body of knowledge and skills that all students should acquire (Null 2007). This approach prioritizes essential concepts and subjects, such as literacy, mathematics, and scientific principles, ensuring that learners develop a solid grounding in critical content. By establishing a strong foundation, essentialism equips students with the necessary tools to navigate further learning and understand complex ideas. Conversely, reconstructivism advocates for a more progressive and student-centered approach, encouraging learners to engage in critical thinking, inquiry, and problem-solving (Chand 2023). Reconstructivist strategies promote exploration and reflection, allowing students to question existing knowledge and societal structures (Holdo 2023). By integrating these strategies into the curriculum, educators can foster an environment where learners are empowered to challenge assumptions, think creatively, and envision new possibilities. The integration of essentialist principles with reconstructivist strategies creates a balanced curriculum that supports both foundational knowledge and critical engagement. For instance, while students may learn essential mathematical concepts, reconstructivist practices can encourage them to apply these concepts to real-world problems,

such as budgeting or analyzing data trends (Serin 2023). This combination not only enhances students' understanding of fundamental principles but also cultivates the skills necessary for navigating complex societal challenges, ultimately preparing them for responsible citizenship in a rapidly changing world.

Progressive and Integrated Curriculum Design

Creating a progressive and integrated curriculum is essential for fostering interdisciplinary connections and ensuring real-world relevance in education. A progressive curriculum emphasizes active learning, student agency, and the integration of diverse perspectives, encouraging students to see the connections between various subjects and their applications in everyday life (Volansky 2023). By designing curricula that transcend traditional subject boundaries, educators can provide students with a holistic understanding of complex issues and challenges facing society. One key aspect of progressive curriculum design is the incorporation of interdisciplinary connections (Ashby and Exter 2019). By linking concepts across subjects—such as science, history, and the arts—students can develop a more comprehensive understanding of the world around them. For example, a project that explores climate change could incorporate scientific research, historical case studies, and artistic expression, allowing students to approach the topic from multiple angles and deepen their understanding of its implications.

Moreover, integrating technology and experiential learning opportunities is crucial in creating a curriculum that resonates with today's learners. Technology can serve as a powerful tool for enhancing student engagement and facilitating access to diverse resources (Balalle 2024). Educators can leverage online platforms, digital tools, and collaborative technologies to create interactive and immersive learning experiences that extend beyond the classroom walls. For instance, virtual simulations, online collaborative projects, and digital storytelling can enrich the learning process, allowing students to explore concepts in innovative ways (Gan et al. 2015). Experiential learning opportunities, such as internships, service learning, and field trips, further enhance the relevance of the curriculum (Stern and Powell 2020). These hands-on experiences allow students to apply their knowledge in real-world contexts, fostering deeper understanding and retention. By engaging with communities, professionals, and experts, learners can see the direct impact of their education on the world around them, reinforcing the importance of their studies.

In summary, integrating theoretical approaches such as essentialism and reconstructivism, along with progressive and interdisciplinary design principles, creates a robust framework for curriculum development. This approach ensures that students receive a well-rounded education that balances foundational knowledge with critical thinking and real-world relevance, ultimately preparing them for success in an interconnected and rapidly evolving society.

Stakeholder Collaboration in Curriculum Development

Effective curriculum development in education is not a solitary endeavor but rather a collaborative process that involves various stakeholders, each contributing unique perspectives and expertise. The roles of educators, policymakers, community members, and students are integral to creating a curriculum that is not only relevant but also equitable and sustainable in the post-pandemic landscape.

Role of Various Stakeholders in Curriculum Design

Educators play a crucial role in curriculum design as they are on the front lines of teaching and learning. Their insights into student needs, learning styles, and the challenges faced in the classroom are invaluable for creating a curriculum that is both engaging and effective (Lindner and Schwab 2020). By involving educators in the curriculum development process, schools can ensure that the content aligns with pedagogical practices and meets the diverse needs of learners. Policymakers, on the other hand, provide the framework and regulations that guide curriculum standards. Their role is essential in ensuring that the curriculum adheres to national educational goals and policies, thereby maintaining a level of consistency and quality across the education system. Furthermore, policymakers can advocate for resources and support needed to implement effective curricula, addressing systemic challenges that may hinder educational equity.

Community members also have a significant impact on curriculum design. Their perspectives can help contextualize learning within the cultural, social, and economic realities of the local population. Engaging community members in curriculum discussions can enhance relevance and ensure that the curriculum reflects the values and needs of the community (Mpuangnan and Ntombela 2024). This is particularly important in a diverse society like Jordan, where multiple voices and experiences must be represented to foster an inclusive educational environment. Students themselves are vital stakeholders in the curriculum development process. Their experiences, preferences, and aspirations should inform the curriculum to ensure it resonates with their interests and prepares them for future challenges. By involving students in discussions about what and how they learn, educators can create a more student-centered curriculum that promotes engagement and ownership over their educational journey.

Strategies for Fostering Collaboration and Shared Ownership

Fostering collaboration among these diverse stakeholders is essential for developing a curriculum that is comprehensive and representative. One effective strategy for promoting collaboration is establishing feedback loops throughout the curriculum design process (Griffiths et al. 2021). This involves creating mechanisms for stakeholders to provide ongoing

input and reflections on curriculum drafts and implementations. Regular meetings, surveys, and focus groups can facilitate this feedback, ensuring that all voices are heard and considered in the decision-making process (Parnell and Gangwish 2023). Inclusive practices are also critical for shared ownership in curriculum development (Freeman-Green et al. 2023). This means actively seeking out and incorporating perspectives from underrepresented groups, ensuring that marginalized voices are amplified. By creating a culture of inclusivity, stakeholders can build trust and commitment to the curriculum, leading to greater investment in its success. Moreover, professional development opportunities for educators can strengthen collaborative efforts (Holmqvist and Lelinge 2021). Workshops, training sessions, and collaborative planning time can equip educators with the skills and knowledge needed to work effectively with other stakeholders (Sancar et al. 2021). This shared professional growth fosters a sense of community and shared responsibility in curriculum design, reinforcing the importance of collaborative engagement.

In summary, stakeholder collaboration in curriculum development is essential for creating a curriculum that is equitable, relevant, and sustainable. By recognizing and valuing the contributions of educators, policymakers, community members, and students and by implementing strategies that promote collaboration and inclusivity, educational institutions can develop a curriculum that truly reflects the needs and aspirations of the entire community. This collaborative approach not only enhances the quality of education but also empowers all stakeholders to take ownership of the learning process, ultimately leading to improved outcomes for students in the post-pandemic educational landscape in Jordan.

Toward a Unified Framework for Equitable Curriculum Design

In addressing the complex challenges facing Jordan's post-pandemic educational landscape, it is essential to move beyond isolated theoretical discussions and toward an integrated understanding of how diverse educational theories can collaboratively inform curriculum design. This section synthesizes constructivism, social justice pedagogy, and systems thinking, while integrating additional perspectives such as critical pedagogy, ecological systems theory, and culturally responsive pedagogy. This theoretical amalgamation offers a comprehensive lens through which equitable and sustainable curriculum reform can be conceptualized and enacted.

Deepening Theoretical Integration

While constructivism emphasizes learner-centered, inquiry-driven approaches that promote critical thinking and meaningful engagement (Chand 2023), social justice pedagogy calls for the active inclusion of marginalized voices and the dismantling of structural inequalities (Hart 2019). These two perspectives align when viewed through the lens of transformative learning—where learners construct knowledge through critical reflection and are empowered to challenge social injustices in their own contexts. Systems thinking complements this integration by

offering a macro-level understanding of the interconnectedness within educational systems. It emphasizes the dynamic relationships among curriculum content, teaching practices, policymaking, school environments, and broader socioeconomic factors (Arnold and Wade 2015). Thus, applying systems thinking allows educators and policymakers to recognize how learner agency, curriculum content, teacher development, and policy reforms interact to either reinforce or redress inequities.

Expanding Theoretical Grounding

To strengthen the theoretical base, three additional frameworks are considered:

- Critical pedagogy (Freire 1970) positions education as a political and emancipatory process. It underscores the necessity for students—particularly those from disadvantaged backgrounds—to critically analyze their realities and transform them through education.
- Ecological systems theory (Bronfenbrenner 1979) offers a nested model that situates learners within interconnected systems (microsystem, mesosystem, exosystem, macrosystem), emphasizing the influence of family, school, community, and sociopolitical structures on educational outcomes.
- Culturally responsive pedagogy (Gay 2009) stresses the importance of integrating students’ cultural backgrounds, languages, and experiences into the curriculum, thus making learning more meaningful and inclusive.

These theories extend and enrich the core frameworks by emphasizing sociocultural responsiveness, power dynamics, and the systemic contexts in which learning occurs.

Synthesizing Key Concepts for Accessibility

To enhance conceptual clarity for a broader readership, the relationships among the six theoretical approaches can be synthesized as follows:

<i>Theoretical Framework</i>	<i>Core Focus</i>	<i>Contribution to Equity and Sustainability</i>
Constructivism	Learner agency and active knowledge construction	Promotes engagement and autonomy in learning
Social Justice Pedagogy	Empowerment of marginalized voices	Ensures inclusive curriculum content and equitable access
Systems Thinking	Interconnectedness of educational elements	Aligns curriculum with social, political, and institutional realities
Critical Pedagogy	Education as a tool for liberation	Challenges oppression and encourages transformative learning
Ecological Systems Theory	Multilayered contexts surrounding learners	Recognizes environmental and systemic barriers to learning
Culturally Responsive Pedagogy	Relevance of cultural identity in teaching and learning	Validates learner diversity and promotes inclusive curriculum design

A conceptual diagram (see Figure 1) visually represents how these theories interact to inform a cohesive approach to curriculum design.

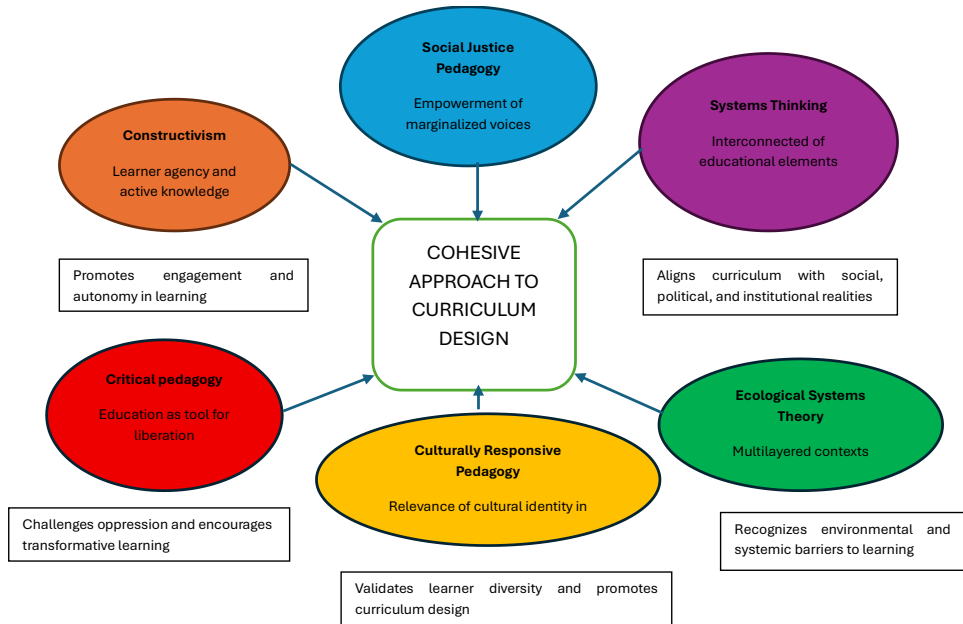


Figure 1: A Visual Model Showing the Overlapping Circles of the Six Theories and Their Shared Outcomes of Equity, Inclusivity, Resilience, and Sustainability

Linking Theory to Context-Specific Strategies in Jordan

Grounding theory in practice is vital for relevance. In Jordan, the COVID-19 pandemic magnified educational challenges such as digital exclusion, refugee education gaps, and gender inequities. Drawing on the synthesized framework:

- Constructivism and culturally responsive pedagogy can inform project-based learning tailored to students' cultural and linguistic backgrounds, especially for Syrian and Palestinian refugee learners.
- Critical pedagogy can guide the development of curricula that empower girls and marginalized groups to challenge gender norms and advocate for their rights.
- Systems thinking and ecological theory can help map community partnerships that provide digital resources and psychosocial support, particularly in underserved rural areas.

By aligning these theoretical insights with Jordan's unique educational challenges, stakeholders can develop curriculum strategies that are responsive, inclusive, and future-oriented.

Proposed Conceptual Framework

The culmination of this discussion is the proposal of a conceptual framework for equitable and sustainable curriculum design in Jordan, which brings together all six theories into a unified model. This framework emphasizes the following:

1. Student empowerment and cultural relevance—integrating student voices and identities in learning.
2. Systemic responsiveness—accounting for sociopolitical, economic, and environmental realities.
3. Pedagogical innovation—promoting interactive, critical, and transformative teaching practices.
4. Collaborative partnerships—engaging educators, policymakers, families, and communities.

This framework serves as a road map for Jordanian curriculum reform that is not only reactive to current post-pandemic needs but also proactive in building an educational system rooted in equity and sustainability.

Implications for Policy and Practice

The transition toward equitable and sustainable curriculum design in post-pandemic education in Jordan necessitates a comprehensive re-evaluation of both policies and practical applications within educational settings. By addressing the challenges exacerbated by the pandemic and recognizing the need for a more inclusive educational framework, stakeholders can work collaboratively to develop effective strategies that promote equitable access to quality education for all learners. To foster a more equitable educational landscape, policymakers must prioritize the development of policies that ensure equitable access to educational resources. This includes allocating funding to underserved schools, enhancing infrastructure, and improving access to technology. By investing in resources that cater to the diverse needs of students, policymakers can mitigate the disparities that have been highlighted during the pandemic and create an environment where all learners can thrive. In addition to resource allocation, it is essential for policymakers to implement strategies for training teachers in new curriculum frameworks. Professional development programs should focus on equipping educators with the skills and knowledge needed to effectively deliver an equitable and sustainable curriculum. This can involve workshops, collaborative planning sessions, and mentorship programs that empower teachers to engage with the latest pedagogical theories and practices. By fostering a culture of continuous learning among educators, policymakers can ensure that the curriculum is not only implemented effectively but also evolves to meet the changing needs of students.

For educators, the implications of equitable and sustainable curriculum design extend to their day-to-day practices in the classroom. Implementing best practices for curriculum design requires a commitment to inclusive teaching strategies that recognize the diverse backgrounds and learning styles of students (Freeman-Green et al. 2023). Educators should aim to create a culturally responsive classroom environment that helps all students feel valued and understood. One effective approach is the incorporation of differentiated instruction, which allows educators to tailor their teaching methods to meet the individual needs of students (Langelaan et al. 2024). This could involve varying instructional strategies, materials, and assessments to accommodate different learning preferences and abilities. By fostering a student-centered approach, educators can promote engagement and improve learning outcomes for all students, particularly those from marginalized populations.

Another best practice is the integration of real-world contexts into the curriculum (O'Neill and Short 2025). By connecting classroom learning to students' lived experiences and local community issues, educators can enhance relevance and stimulate critical thinking. Project-based learning, for instance, can provide opportunities for students to collaborate on meaningful projects that address real-world challenges, thus fostering a sense of agency and empowerment (Yu 2024). Furthermore, educators should establish feedback mechanisms that encourage open communication with students regarding their learning experiences. This can involve regular check-ins, surveys, or reflection activities that allow students to voice their opinions on the curriculum and instructional methods. Student feedback can help educators make informed adjustments to their teaching practices, ensuring that the curriculum remains responsive and effective.

In summary, the implications for policy and practice in post-pandemic education in Jordan underscore the need for collaborative efforts among policymakers and educators. By developing policies that support equitable access to resources and investing in teacher training, policymakers can create a foundation for sustainable change. Simultaneously, educators can implement best practices that promote inclusive teaching and foster a sense of belonging among all students. Together, these efforts can contribute to a more equitable and sustainable educational landscape in Jordan, ensuring that every learner is equipped with the skills and knowledge needed to succeed in an increasingly complex world.

Conclusion

This article has examined the role of theoretical approaches—specifically constructivism, social justice pedagogy, and systems thinking—in developing equitable and sustainable curricula for post-pandemic education in Jordan. These frameworks emphasize the importance of student engagement, critical thinking, and the creation of an inclusive environment that values diverse backgrounds and experiences. A curriculum built on these principles not only addresses immediate educational challenges but also lays the foundation for a resilient system that can

adapt to future demands. Equitable curriculum design is essential in order to ensure that all students, regardless of their socioeconomic status or background, have access to the resources and opportunities needed to succeed. Moreover, fostering collaboration among educators, policymakers, students, and community members ensures that curriculum development is responsive to the broader needs of society. As the education system works to recover from the pandemic, integrating these theoretical frameworks into curriculum design can help create a more inclusive, just, and sustainable educational environment.

Moving forward, several recommendations emerge. Future research should focus on longitudinal studies to evaluate the long-term impacts of equitable and sustainable curriculum reforms, particularly on marginalized groups. There is also a need to explore innovative instructional strategies, such as technology integration and experiential learning, to equip educators with the necessary tools for an evolving educational landscape. Additionally, prioritizing professional development in equity and inclusion will empower educators to implement these pedagogical strategies effectively.

In conclusion, working toward the creation of an equitable and sustainable curriculum in Jordan requires continued commitment and collaboration. By embracing these theoretical frameworks, stakeholders can work together to address existing inequities and build a curriculum that not only meets current needs but also prepares students for the challenges of the future. The insights gained from this article provide a valuable foundation for meaningful change, contributing to a more inclusive and equitable educational system in Jordan.

Recommendations

The education system in Jordan, like many around the world, faced unprecedented challenges during the COVID-19 pandemic. As the country transitions into post-pandemic recovery, it is crucial to focus on building a more inclusive and resilient education system. The following recommendations provide actionable strategies for policymakers, educators, and practitioners, as well as identify areas for further research to guide future efforts in strengthening Jordan's educational framework.

Recommendations for Policy, Academic, and Practitioner Practices

Strengthen Educational Policy for Equity and Access

Policymakers must prioritize the development of inclusive policies that ensure equitable access to educational resources for all students, especially marginalized groups such as refugee learners, girls in rural areas, and students with disabilities. The following should be the focal areas of these policies:

- Investing in infrastructure and digital technologies that support remote and hybrid learning environments. This will ensure that learning can continue seamlessly, regardless of location or socioeconomic status.
- Allocating targeted funding to address the educational gaps exacerbated by the pandemic, ensuring that disadvantaged communities receive the support they need to thrive academically.

Capacity Building for Educators

To achieve an equitable and sustainable curriculum, educators must be equipped with the skills needed to implement new approaches effectively. Professional development programs should include the following:

- Inclusive pedagogies such as culturally responsive teaching and social justice education, ensuring that all students feel valued and understood.
- Digital literacy training to help teachers integrate technology and foster twenty-first-century learning skills in students.
- Constructivist and experiential teaching methods that promote student engagement and autonomy, enabling learners to take ownership of their education.

Foster Multi-Stakeholder Collaboration in Curriculum Design

Curriculum development should be a collaborative effort involving diverse stakeholders—educators, policymakers, students, parents, and community leaders. Key strategies include the following:

- Collaborative curriculum planning sessions that involve all relevant parties in the decision-making process.
- Regular stakeholder consultations and feedback loops to ensure the curriculum is both relevant and responsive to the needs of all learners.

Promote Interdisciplinary and Experiential Learning

Curriculum designers should emphasize approaches that connect academic content to real-world challenges. Recommended strategies include the following:

- Embedding sustainability and social responsibility themes across various subjects to prepare students for the complexities of the future.
- Implementing community-based projects and service learning, encouraging civic engagement and problem-solving skills that benefit both students and their communities.

Ensure Equitable Integration of Technology

Technology has the potential to transform education, but it must be used in a way that promotes equity. Schools and institutions should take the following steps:

- Provide access to digital devices and internet connectivity for all students, ensuring no learner is left behind due to lack of resources.
- Promote digital literacy initiatives to ensure both students and teachers are adept at using technology to enhance learning.
- Design inclusive digital platforms that accommodate diverse learning needs, fostering accessibility for all learners, regardless of ability or background.

Embed Social Justice in Curriculum and Teaching Practice

A commitment to social justice should be embedded in curriculum design and teaching practices. These include the following:

- Critical examination and decolonization of curriculum content to ensure that it reflects diverse perspectives and challenges traditional biases.
- Encouraging educators to actively engage in self-reflection and adapt their teaching practices to embrace diverse cultural, linguistic, and historical perspectives.

Recommendations for Further Research

Longitudinal Studies on Curriculum Reform

Educational institutions and research bodies should conduct long-term studies to evaluate the impact of curriculum changes on various learner groups, particularly those who have historically been marginalized. This research should assess the following:

- Academic performance, retention, and engagement over time.
- The role of curriculum in fostering resilience and well-being, particularly in the context of the post-pandemic educational landscape.

Investigating the Intersection of Theory and Practice

There is a need for further research into how theoretical frameworks, such as constructivism, systems thinking, and social justice pedagogy, can be translated into practical, context-specific strategies in Jordanian classrooms. Case studies and action research can provide valuable insights into how these theories are implemented in practice and their impact on learning outcomes.

Exploring Culturally Responsive and Ecologically Informed Pedagogies

Research should explore how culturally responsive teaching, along with ecological systems theory, can shape curriculum to reflect the lived experiences, family structures, and community dynamics of students. This includes an examination of the following:

- The role of language, identity, and sociopolitical context in shaping learning outcomes.
- How these pedagogies can be integrated into the curriculum to better support diverse learners.

Assessing the Role of Technology in Promoting Equity

Empirical studies are needed to assess how various forms of technology affect access, engagement, and achievement among students from different socioeconomic backgrounds. Research should focus on both urban and rural schools to identify specific barriers and enablers in each context, providing a nuanced understanding of technology's role in promoting educational equity.

By implementing these targeted strategies and pursuing ongoing research, Jordan can lay the foundation for a more inclusive and resilient education system. The proposed curriculum reforms, grounded in equity, sustainability, and responsiveness to diverse learner needs, will not only address the immediate challenges posed by the pandemic but also create a transformative educational framework for the future. Through thoughtful policy, collaboration, and research, Jordan can build a system that empowers all learners to succeed in an increasingly complex and interconnected world.

AI Acknowledgment

The authors acknowledge the use of ChatGPT. The prompts used include “How can inclusive pedagogy principles shape curriculum design to ensure equitable access to quality education in Jordan?”; “What strategies can be employed in curriculum development to bridge the urban–rural education divide exacerbated by the pandemic in Jordan?”; and “What theoretical frameworks are most suitable for equitable curriculum development in the context of Jordan’s socio-economic diversity?” The output from these prompts was used to explore the theoretical approaches to equitable and sustainable curriculum design in post-pandemic education in Jordan. The AI-generated output was used primarily during the drafting and research process to refine research questions, explore theoretical frameworks, and structure arguments related to the theoretical approaches to equitable and sustainable curriculum design in post-pandemic education in Jordan. AI assistance was utilized for brainstorming, summarizing literature, and enhancing conceptual clarity but was not directly integrated as written text or research findings in the final article. While the authors acknowledge the use of AI, they maintain that they are the sole authors of this article and take full responsibility for the content therein, as outlined in COPE recommendations.

Informed Consent

The author declares that informed consent was not required as there were no human participants involved.

Conflict of Interest

The authors declare that there is no conflict of interest.

REFERENCES

- Abedi, Elias Adebayo. 2024. "Tensions Between Technology Integration Practices of Teachers and ICT in Education Policy Expectations: Implications for Change in Teacher Knowledge, Beliefs and Teaching Practices." *Journal of Computers in Education* 11: 1215–1234. <https://doi.org/10.1007/s40692-023-00296-6>.
- Ainscow, Mel. 2020. "Promoting Inclusion and Equity in Education: Lessons from International Experiences." *Nordic Journal of Studies in Educational Policy* 6 (1): 7–16. <https://doi.org/10.1080/20020317.2020.1729587>.
- Arnold, David J., and John P. Wade. 2015. "A Definition of Systems Thinking: A Systems Approach." *Procedia Computer Science* 44: 669–678. <https://doi.org/10.1016/j.procs.2015.03.050>.
- Ashby, Iris, and Megan Exter. 2019. "Designing for Interdisciplinarity in Higher Education: Considerations for Instructional Designers." *TechTrends* 63 (2): 202–208. <https://doi.org/10.1007/s11528-018-0352-z>.
- Balalle, Huda. 2024. "Exploring Student Engagement in Technology-Based Education in Relation to Gamification, Online/Distance Learning, and Other Factors: A Systematic Literature Review." *Social Sciences & Humanities Open* 9: 100870. <https://doi.org/10.1016/j.ssaho.2024.100870>.
- Benson, Sherry K. 2020. "The Evolution of Jordanian Inclusive Education Policy and Practice." *FIRE: Forum for International Research in Education* 6 (1): 102–121. <https://doi.org/10.32865/fire202061177>.
- Booyse, Christo, and Rajendra Chetty. 2016. "The Significance of Constructivist Classroom Practice in National Curricular Design." *Africa Education Review* 13 (1): 135–149. <https://doi.org/10.1080/18146627.2016.1182296>.
- Bronfenbrenner, Urie. 1979. *The Ecology of Human Development: Experiments by Nature and Design*. Harvard University Press.
- Budd, John, Brooke S. Miller, Emily M. Manning, et al. 2020. "Digital Technologies in the Public-Health Response to COVID-19." *Nature Medicine* 26: 1183–1192. <https://doi.org/10.1038/s41591-020-1011-4>.
- Cele, Nompumelelo O. 2021. "Understanding Language Policy as a Tool for Access and Social Inclusion in South African Higher Education: A Critical Policy Analysis Perspective." *South African Journal of Higher Education* 35 (6): 25–46. <https://doi.org/10.20853/35-6-3730>.

- Chand, Sanjeev Prasad. 2023. "Constructivism in Education: Exploring the Contributions of Piaget, Vygotsky, and Bruner." *International Journal of Science and Research (IJSR)* 12 (7): 274–278. <https://doi.org/10.21275/SR23630021800>.
- Cooc, North, and Grace M. Kim. 2023. "School Inclusion of Refugee Students: Recent Trends from International Data." *Educational Researcher* 52 (4): 206–218. <https://doi.org/10.3102/0013189X221149396>.
- Falloon, Garry. 2020. "From Digital Literacy to Digital Competence: The Teacher Digital Competency (TDC) Framework." *Education Technology Research and Development* 68 (5): 2449–2472. <https://doi.org/10.1007/s11423-020-09767-4>.
- Freeman-Green, Shaqwana, Pamela Williamson, and K. Elizabeth Cornelius. 2023. "Promoting Inclusive Practices in Education: Bridging Gaps and Fostering Independence." *Teaching Exceptional Children* 56 (2): 68–69. <https://doi.org/10.1177/00400599231223785>.
- Freire, Paulo. 1970. *Pedagogy of the Oppressed*. Penguin Books.
- Gan, Benjamin, Thomas Menkhoff, and Roy Smith. 2015. "Enhancing Students' Learning Process Through Interactive Digital Media: New Opportunities for Collaborative Learning." *Computers in Human Behavior* 51 (Part B): 652–663. <https://doi.org/10.1016/j.chb.2014.12.048>.
- Gay, Geneva. 2009. "Preparing Culturally Responsive Mathematics Teachers." In *Culturally Responsive Mathematics Education*, edited by Brian Greer, Swapna Mukhopadhyay, Arthur B. Powell, and Sharon Nelson-Barber. Routledge.
- Griffiths, Amanda J., James Alsip, Sara R. Hart, Rebecca L. Round, and Jacqueline Brady. 2021. "Together We Can Do So Much: A Systematic Review and Conceptual Framework of Collaboration in Schools." *Canadian Journal of School Psychology* 36 (1): 59–85. <https://doi.org/10.1177/0829573520915368>.
- Harmey, Sinéad, and Gemma Moss. 2021. "Learning Disruption or Learning Loss: Using Evidence from Unplanned Closures to Inform Returning to School After COVID-19." *Educational Review* 75 (4): 637–656. <https://doi.org/10.1080/00131911.2021.1966389>.
- Hart, Caroline S. 2019. "Education, Inequality and Social Justice: A Critical Analysis Applying the Sen-Bourdieu Analytical Framework." *Policy Futures in Education* 17 (5): 582–598. <https://doi.org/10.1177/1478210318809758>.
- Hays, Jennifer, and Hayo Reinders. 2020. "Sustainable Learning and Education: A Curriculum for the Future." *International Review of Education* 66 (1): 29–52. <https://doi.org/10.1007/s11159-020-09820-7>.
- Holdo, Markus. 2023. "Critical Reflection: John Dewey's Relational View of Transformative Learning." *Journal of Transformative Education* 21 (1): 9–25. <https://doi.org/10.1177/15413446221086727>.
- Holmqvist, Mona, and Bodil Lelinge. 2021. "Teachers' Collaborative Professional Development for Inclusive Education." *European Journal of Special Needs Education* 36 (5): 819–833. <https://doi.org/10.1080/08856257.2020.1842974>.

- Ives, David, and Karen Nygreen. 2024. "Theory and Practice of Justice-Oriented Teacher Education." *Equity & Excellence in Education* 57 (2): 137–138. <https://doi.org/10.1080/10665684.2024.2368913>.
- Khater, Mohamad. 2023. "Refugee Children's Right to Education: Education of Syrian Refugee Children in Jordan—Reality and Prospects." *Access to Justice in Eastern Europe* 3 (20): 108–119. <https://doi.org/10.33327/AJEE-18-6.3-a000302>.
- Langelaan, Bente N., Laura Gaikhorst, Wilfried Smets, and Ron J. Oostdam. 2024. "Differentiating Instruction: Understanding the Key Elements for Successful Teacher Preparation and Development." *Teaching and Teacher Education* 140: 104464. <https://doi.org/10.1016/j.tate.2023.104464>.
- Lindner, Katharina T., and Susanne Schwab. 2020. "Differentiation and Individualisation in Inclusive Education: A Systematic Review and Narrative Synthesis." *International Journal of Inclusive Education* 1–21. <https://doi.org/10.1080/13603116.2020.1813450>.
- Livingston, Erika, Emily Houston, Jonathan Carradine, et al. 2023. "Global Student Perspectives on Digital Inclusion in Education During COVID-19." *Global Studies of Childhood* 13 (4): 341–357. <https://doi.org/10.1177/20436106221102617>.
- Mitani, Hajime. 2021. "Test Score Gaps in Higher Order Thinking Skills: Exploring Instructional Practices to Improve the Skills and Narrow the Gaps." *AERA Open* 7 (1): 1–23. <https://doi.org/10.1177/23328584211016470>.
- Mpuangnan, Kabelo N., and Sithabile Ntombela. 2024. "Community Voices in Curriculum Development." *Curriculum Perspectives* 44: 49–60. <https://doi.org/10.1007/s41297-023-00223-w>.
- Null, John Wesley. 2007. "William C. Bagley and the Founding of Essentialism: An Untold Story in American Educational History." *Teachers College Record* 109 (4): 1013–1055. <https://doi.org/10.1177/016146810710900408>.
- O'Neill, Geraldine, and Ann Short. 2025. "Relevant, Practical and Connected to the Real World: What Higher Education Students Say Engages Them in the Curriculum." *Irish Educational Studies* 44: 23–40. <https://doi.org/10.1080/03323315.2023.2221663>.
- Parnell, Renee A., and Alyson Gangwish. 2023. "Effective Collaborative Decision-Making Includes Stakeholder Analysis and Communication." In *A Practical Guide for Developing Cross-Disciplinary Collaboration Skills*, edited by Dorothy Gosselin. AESS Interdisciplinary Environmental Studies and Sciences Series. Springer.
- Pokhrel, Subedi, and Roshan Chhetri. 2021. "A Literature Review on Impact of COVID-19 Pandemic on Teaching and Learning." *Higher Education for the Future* 8 (1): 133–141. <https://doi.org/10.1177/2347631120983481>.
- Presler-Marshall, Emily, Emma Oakley, Nicola Jones, et al. 2023. *Education in Jordan: Post-Covid Opportunities and Challenges for Young People*. Gender and Adolescence: Global Evidence.

- Ramorola, Mashilo Zacharia. 2013. "Challenge of Effective Technology Integration into Teaching and Learning." *Africa Education Review* 10 (4): 654–670. <https://doi.org/10.1080/18146627.2013.853559>.
- Salinas, Daniela, and Carlos Garrido Garrido. 2022. "Teacher Educators' Adaptability Process When Faced with Remote Teaching." *Teaching and Teacher Education* 120: 103890. <https://doi.org/10.1016/j.tate.2022.103890>.
- Sancar, Rukiye, Duygu Atal, and Deniz Deryakulu. 2021. "A New Framework for Teachers' Professional Development." *Teaching and Teacher Education* 101: 103305. <https://doi.org/10.1016/j.tate.2021.103305>.
- Serin, Huseyin. 2023. "Teaching Mathematics: Strategies for Improved Mathematical Performance." *International Journal of Social Sciences and Educational Studies* 10 (3): 146. <https://doi.org/10.23918/ijsses.v10i3p146>.
- Sing Yun, Woo. 2023. "Digitalization Challenges in Education During COVID-19: A Systematic Review." *Cogent Education* 10 (1): 2198981. <https://doi.org/10.1080/2331186X.2023.2198981>.
- Spain, Susan. 2019. "Systems Thinking Applied to Curriculum and Pedagogy: A Review of the Literature." *Curriculum Perspectives* 39 (2): 135–145. <https://doi.org/10.1007/s41297-019-00085-1>.
- Stern, Marc J., and Robert B. Powell. 2020. "Field Trips and the Experiential Learning Cycle." *Journal of Interpretation Research* 25 (1): 46–50. <https://doi.org/10.1177/1092587220963530>.
- Van de Werfhorst, Herman G., Elise Kessenich, and Sara Geven. 2022. "The Digital Divide in Online Education: Inequality in Digital Readiness of Students and Schools." *Computers and Education Open* 3: 100100. <https://doi.org/10.1016/j.cao.2022.100100>.
- Volansky, Ami. 2023. "The Theory of Progressive Education." In *The Three Waves of Reform in the World of Education 1918–2018*. Springer.
- Vreuls, Jeroen, Marcel van der Klink, Mieke Koeslag-Kreunen, Slavi Stoyanov, Henny Boshuizen, and Loek Nieuwenhuis. 2025. "Responsive Curriculum Development: Which Factors Support Breaking Through Institutional Barriers?." *Journal of Vocational Education & Training* 77: 582–610. <https://doi.org/10.1080/13636820.2023.2270470>.
- Wills, Gabrielle, and Servaas van der Berg. 2024. "COVID-19 Disruptions and Education in South Africa: Two Years of Evidence." *Development Southern Africa* 41 (2): 446–465. <https://doi.org/10.1080/0376835X.2024.2311711>.
- Yu, Hao. 2024. "Enhancing Creative Cognition Through Project-Based Learning: An In-Depth Scholarly Exploration." *Heliyon* 10 (6): e27706. <https://doi.org/10.1016/j.heliyon.2024.e27706>.

ABOUT THE AUTHORS

Sam Ramaila: Professor, Department of Mathematics, Science and Technology Education, University of Johannesburg, Johannesburg, Gauteng Province, South Africa
Corresponding Author's Email: samr@uj.ac.za

Thasmai Dhurumraj: Senior Lecturer, Department of Mathematics, Science and Technology Education, University of Johannesburg, Johannesburg, Gauteng Province, South Africa
Email: tdhurumraj@uj.ac.za

Hena Ahmed Iraqui: Senior Lecturer, Department of Education, International Open University, Banjul, The Gambia
Email: hena_a66@hotmail.com