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Towards a Humanist and Digital Education: Detailed Impact of Education 5.0 on the Educational Relationship in Tunisian Primary Schools

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ABSTRACT

This article explores the detailed impact of Education 5.0 on pedagogical relationships in Tunisian primary schools. Using a mixed-method approach combining a quantitative survey of 127 teachers, qualitative classroom observations, and semi-structured interviews, the study highlights the benefits and challenges of integrating digital tools into primary education. The findings reveal that the thoughtful use of digital tools, such as artificial intelligence and collaborative platforms, significantly improves the teacher–student relationship, encourages interaction and cooperation among students, and enables effective individualization of learning. However, the transition to Education 5.0 faces major obstacles, particularly in terms of digital infrastructure, adequate teacher training, and institutional support. The article concludes with practical recommendations to ensure an inclusive, equitable, and sustainable implementation of Education 5.0 in Tunisia.

Keywords: Education 5.0; educational relationship; primary school; Tunisia; digital; individualized learning; artificial intelligence.

INTRODUCTION

Education, the foundation of any sustainable society, is currently at a critical juncture. In a world characterized by rapid technological change, the emergence of artificial intelligence, and the widespread use of digital technology, education systems are challenged to rethink their objectives, practices, and tools. In Tunisia, this transformation is all the more crucial given the multidimensional crisis facing the school system: growing student demotivation, overcrowded classrooms, unequal access to digital technology, and inadequate teaching practices for the needs of 21st-century learners. It is in this context that the need for an innovative educational model is essential, better adapted to current demands and capable of ensuring quality, inclusive, and student-centered education.

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In today's era of rapid and ubiquitous technological change, the field of education is undergoing a critical phase of transformation. Faced with the challenges posed by the integration of digital technologies and artificial intelligence, Tunisia, like other countries, is seeking to modernize its education system. Tunisian primary schools particularly suffer from structural and pedagogical problems: overcrowded classes, demotivated students, inappropriate teaching methods, and a marked digital divide between regions (OECD, 2022).

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In this context, Education 5.0 appears as a promising alternative, seeking to harmonize technological innovation and humanist values. This model distinguishes itself from previous educational revolutions (from Education 1.0 to Education 4.0) by its ethical, inclusive and deeply human-centered approach (Rubeena & Ansari, 2024). This research specifically examines how Education 5.0 concretely influences the pedagogical relationship, a central element of the educational process according to Altet (2002), and under what conditions this influence manifests itself in Tunisian primary schools.

Two hypotheses structure the study:

- Education 5.0 promotes a significant improvement in the educational relationship thanks to a more individualized, collaborative and engaging pedagogy.
- The effectiveness of Education 5.0 in Tunisia is highly dependent on tangible and intangible infrastructure (training, institutional support).

Among the emerging models, Education 5.0 occupies a unique place. It proposes a synthesis between technological advances and humanist values, placing the student at the center of the learning process and valuing the educational relationship in all its forms. More than a simple digitalization of teaching, Education 5.0 aims for an ethical and global transformation of pedagogy. Several international studies support this vision. Rubeena and Ansari (2024)[1] describe Education 5.0 as an intelligent and humanist system capable of developing the cognitive, emotional and social skills of learners. Chikomo et al. (2023)[2], for their part, warn against the risks of digital exclusion, particularly in African countries, emphasizing the need for inclusive and equitable integration of educational technologies.

This research is part of this dynamic of transformation and aims to explore the concrete effects of Education 5.0 on pedagogical relationships within Tunisian primary schools. It seeks to understand how digital tools influence interactions between teachers and students, between students themselves, as well as the relationship that learners have with technology. The objective is multiple: to analyze the contributions and limitations of Education 5.0, to identify the conditions for its effective implementation and to propose avenues for improvement adapted to the Tunisian context.

The central problem of this study can be formulated as follows: To what extent does the integration of Education 5.0 make it possible to transform the pedagogical relationship in Tunisian primary schools, while respecting the socio-educational realities of the country?

Two hypotheses guide this research:

- Hypothesis 1: The thoughtful integration of Education 5.0 tools promotes a more personalized, engaging and inclusive educational relationship.
- Hypothesis 2: The effective deployment of Education 5.0 depends on structural conditions (infrastructure, training, institutional support) which are still unevenly met in the Tunisian context.

METHODOLOGY

This research adopted a mixed methodological approach to deepen understanding of the phenomenon. A questionnaire was administered to 127 teachers from several Tunisian regions to collect quantitative data on their use of digital tools, perceptions of their pedagogical impact, difficulties encountered, and continuing training needs.

Furthermore, a comparative observation was conducted at the Ibn Sina school in Sfax, within two third-year primary school classes. Two teaching situations per class were studied: a traditional one without the use of digital tools, and a second integrating specific digital tools (Wordwall, Canva, Liveworksheets, Quizlet AI). Semi-structured interviews with teachers and management enriched the qualitative interpretation of the data collected.

Methodological triangulation thus made it possible to consolidate the validity of the results by cross-referencing declared and observed practices and institutional representations of technopedagogical change (Creswell & Plano Clark, 2011).

In order to rigorously and nuancedly analyze the effects of Education 5.0, this study adopted a mixed methodological approach combining quantitative and qualitative research tools. This approach not only allows for cross-reference of points of view and validation of results, but also takes into account the complexity of the Tunisian educational landscape. It aims to compare teachers' declared practices with their actual practices, and to highlight institutional perceptions of technological change.

First, a structured questionnaire was administered to a sample of 127 primary school teachers working in different regions of the country. This questionnaire collected data on the use of digital tools, perceived impacts on pedagogical communication, obstacles encountered, as well as continuing training needs.

Second, observations were conducted in two third-grade classes at the Ibn Sina Public School in Sfax. Two sessions for each teacher were compared: one without technology, the other integrating different digital tools such as Wordwall, Canva, or Liveworksheets.

Third, a semi-structured interview was conducted with the director of the establishment.

The triangulation of these three sources - questionnaire, observation, interview - thus made it possible to establish the reliability of the results, by comparing discourses, practices and contexts.

RESULTS

The results show a significant positive impact of Education 5.0 on the educational relationship but also notable disparities:

The majority of teachers (85%) report that digital tools improve educational communication and facilitate student engagement.

Classroom observations show that the introduction of collaborative tools such as Padlet or Jamboard strengthens positive interactions between students, increases cooperation and improves collective learning dynamics.

The use of tools integrating artificial intelligence (Quizlet AI) helps to individualize learning paths and adapt educational content to the specific needs of students.

However, significant challenges remain: only 30.7% of teachers report having received adequate training on these technologies, and material difficulties (limited access to digital equipment and the Internet in certain regions) are hampering their widespread deployment.

The results show notable and differentiated effects of Education 5.0 on pedagogical relationships. In the classroom, the use of digital tools has profoundly changed the posture of the teachers observed. Relationships between students have also been transformed: activities on Padlet or Jamboard have stimulated cooperation, listening and mutual support. The introduction of artificial intelligence tools like Quizlet AI has allowed content to be adapted to the learners' levels. However, these practices still depend on the digital skills of teachers and the availability of materials according to the interview with the principal. These elements are confirmed by the questionnaire, the results of which indicate that 85% of teachers perceive an improvement in communication thanks to digital tools, but that only 30.7% of them have received adequate training.

Analysis

Cross-analysis highlights notable yet uneven developments in teaching practices in a digital context. On the one hand, Education 5.0 provides a relevant response to current expectations regarding differentiation, inclusion, and motivation [1–3]. On the other, the transition is constrained by infrastructural gaps, training deficits, and institutional variability [10,13]. The overall picture is a dual movement: an undeniable potential for pedagogical transformation accompanied by persistent obstacles that require concrete policy and pedagogical responses [11].

DISCUSSION

This research highlights a dual reality: Education 5.0 has major transformational potential for teaching practices, but its effective implementation remains conditioned by key structural factors.

From a theoretical point of view, this study mobilizes several conceptual frameworks:

The humanistic approach of Rogers (1969) and Maslow (1943) sheds light on the transformation of the teaching role into an empathetic facilitator and companion of the student's overall growth.

Vygotsky's (1978) socioconstructivism explains how digital tools stimulate collaborative learning and strengthen peer exchanges.

The connectivism proposed by Siemens (2005) makes it possible to understand the way in which students process information, by bringing out critical skills

in accessing and manipulating knowledge via digital networks.

These theoretical perspectives are confirmed by recent research such as that of Rubeena and Ansari (2024) and Chikomo et al. (2023), who emphasize the importance of an inclusive and humanistic vision of digital education, particularly in the African context where the digital divide is prevalent.

However, the study also highlights the obstacles identified by Rogers (2003)[4] in his model of diffusion of innovations: resistance to change, lack of adequate training and regional disparities in access to digital technology.

Finally, according to Paulo Freire's critical pedagogy (1970), it is essential that these technological innovations are accompanied by an emancipatory vision, aiming not only to reduce existing inequalities but also to promote a fairer and more inclusive education.

The results of this study corroborate several contemporary research studies that examine the emergence and implications of Education 5.0 in educational systems. Thus, Rubeena and Ansari (2024) propose a vision of Education 5.0 as a humanistic pedagogical model, focused on the ethical integration of technologies to strengthen human connections in teaching. The observations carried out in Sfax confirm this orientation: digital tools, far from replacing the teacher, allow them to play the role of a benevolent guide, adapting courses and stimulating student motivation. From a more critical perspective, Chikomo et al. (2023) point out that the development of digital education in Africa cannot be achieved without a reflection on inclusion: our study validates this observation by highlighting the strong disparities between establishments in terms of equipment, Internet access and continuing education. Finally, Shaji's (2023)[3] contributions on augmented reality are relevant to our field, showing that educational immersion can increase students' understanding, provided that the content is carefully scripted.

Theoretically, the results fit into several conceptual frameworks. The humanistic approach, inspired by Rogers and Maslow [5], sheds light on the repositioning of the teacher as a facilitator of the student's overall development. Vygotsky's socioconstructivism[6] is manifested through the group dynamics observed in digital collaborative activities, where learning is fostered through interaction and social mediation.

Connectivism, formulated by Siemens[7] and Downes[8], is also relevant: in the observed classes, students access information, manipulate it and reorganize it, supported by adaptive platforms such as Quizlet AI. These changes, however, raise resistance, which Rogers[9]'s innovation diffusion model allows us to interpret: lack of equipment, reluctance to change, training inequalities are all obstacles to overcome.

Finally, in light of Paulo Freire's critical pedagogy[8], this study reminds us that technological innovation must remain at the service of a liberating education. Education 5.0, to be authentically transformative, must aim for the emancipation of learners, the inclusion of the most vulnerable, and the reduction of structural inequalities. It can only succeed if it is accompanied by an ethical framework, an ambitious educational policy, and a collective commitment to a school that is equitable, humane, and resolutely forward-looking.

This research concludes that it is relevant and necessary to develop a clear national strategy for implementing Education 5.0 in Tunisia. Among the operational avenues put forward, we can cite:

Strengthening initial and continuing training for teachers on digital educational tools.

Improving digital infrastructure in primary schools, particularly in disadvantaged areas.The dissemination of practical tools such as the "Guide to Interactive and Technological Tools for Education 5.0", developed as part of this research, in order to support teachers in this technopedagogical transition.

This ambitious approach, combining technological innovation and humanist principles, appears essential to effectively respond to current educational needs and prepare Tunisian schools for future challenges.

based on artificial intelligence (Genially, MagicSchool AI). Each sheet includes a description, concrete examples of use in the Tunisian context, and QR codes leading to tutorials.

The methodological choices are based on needs identified in Sfax primary schools and on feedback from teachers who have experimented with these tools. Initial results show a positive impact on student motivation and understanding, particularly in languages and mathematics. The guide also offers concrete recommendations regarding ongoing teacher training, adaptation to local technical resources, and strengthening the school-family relationship.

CONCLUSION

Education 5.0 holds major transformational potential for Tunisian primary education, particularly for revitalizing the pedagogical relationship and supporting personalization and collaboration. Its success, however, depends on robust infrastructural and institutional support, equitable access, and sustained teacher development. An ambitious yet human-centered strategy grounded in ethical principles and social justice appears essential to meet current needs and prepare schools for future challenges [1–3,5–11,13].

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