Chapter 1
Digital Textbook and Educational Outcomes:
Design to Performance

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ABSTRACT

Educational technology has great potential to confront the challenges encountered in the educational system and place itself at the core of the teaching-learning process. The aim of this study is to use the digital textbook to enhance student learning within an active pedagogy and to strengthen the development of students' academic results. The experiments were carried out in two secondary schools belonging to the Casablanca regional academy in the Kingdom of Morocco. The research samples consisted of 362 students. A methodology describes the process of developing a digital textbook, from scripting to design and use with students. The results showed that developing the digital textbook according to a design and scripting model enabled the authors to design a textbook that could be used by students, with remarkable results. The use of digital textbooks enabled students to improve their educational outcome.

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1. INTRODUCTION

In the era of technology and the internet, digital transformation has put information and communication technologies (ICT) at the core of modernization and accelerated expansion to meet the challenges facing the education system of nations. As a result, it is inadmissible to anticipate the development of the teaching-learning process without having recourse to the integration of ICT to strengthen the teaching-learning process to fulfil its role of producing knowledge and developing students' skills and competencies (Bank, 2017; Hussain et al., 2011; Grabe & Grabe, 2007). To carry out its role properly, the education system requires teaching stakeholders to introduce educational technologies to foster learner engagement and motivation, encourage collaborative work, govern innovative and creative learning, and reinforce knowledge acquisition and skills development.

Furthermore, Gómez-Galán (2020) points out that the introduction of ICT has led to the digitization of the fundamentals of the didactic means of the teaching-learning process, such as digital didactic tools (interactive whiteboard, video projector, computer, tablet ...) and digital teaching resources (interactive courses, self-correcting exercises, animated videos, simulation and demonstration software, serious games ...). In addition, Information and Communication Technologies (ICT) for teaching have enabled students to change their role from passive consumer of knowledge to active co-producer of knowledge, and ICT has a positive effect on learner motivation, engagement and learning outcomes (Ben Youssef et al., 2022).

One of the main didactic means in the teaching-learning process is "textbook", a fundamental and central tool in the teaching-learning process (Memaï & Rouag, 2017) and is generally edited and printed on paper. The textbook has shown itself to be outdated, while digital transformation has swept through several didactic means since the introduction of ICTE (Dutrieux, 2016). As a result, the paper textbook remains an irreplaceable didactic tool that can be used in different contexts and situations, a complement to the teacher's work and a knowledge support for students. Therefore, it will be very difficult to move beyond the use of the textbook in the digital age, but to renovate the design of the textbook to benefit from the potential of digital technology and regain its central place in a digitized educational environment.

Similarly, the advent of Information and Communication Technology (ICT) has led to the emergence of new teaching methods while bolstering existing ones. Lebrun's research in 2011 highlights that integrating ICT can enhance the teaching-learning process, necessitating educators to embrace active pedagogical approaches to fully harness the benefits of educational technologies. One such active pedagogical method that integrates ICT is the flipped classroom, which has evolved alongside advancements in ICT. Moreover, research indicates that both flipped classroom instruction and ICT integration have a favorable impact on student-centered and active learning, elevating student engagement and ultimately enhancing learning outcomes (Aidoo et al., 2022; Romero et al., 2017).

In this respect, on the one hand, modernization is needed during textbook design, addressing restrictions on textbook use, and including the potential of information and communication technologies (ICT). On the other hand, good practice in the integration of ICT requires teachers to adopt an active, student-centered pedagogical method, to benefit more from the latter, and to make students actors in their learning, so that they reach a higher level of cognitive capacity.

The main aim of this study is to use the digital textbook to enhance student learning within an active pedagogy and to strengthen the development of students' academic results.