Teachers' Readiness for Change and Computer Self-Efficacy as Predictors of Assistive Technology Adoption in the Digitally Evolving Secondary Education

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***Abstract*—Due to the rapid digital transformation of educational environments, teachers' roles have been reshaped, revealing the need to integrate assistive technologies into their teaching, to address students' diverse learning needs. This study examines how secondary-school teachers' readiness for change and computer self-efficacy, influence their intention to adopt assistive technology in the Greek context, specifically within Greece's secondary education system. Using random sampling, we collected data from 309 teachers and analysed them with structural Equation modelling, Exploratory Factor Analysis (EFA), and Partial Least Squares (PLS). Results confirmed significant positive relationships between readiness for change and computer self-efficacy ($t = 6.414$, $p < 0.001$), readiness for change and intention to use assistive technology ($t = 8.144$, $p < 0.001$), and computer self-efficacy and intention to use assistive technology ($t = 6.401$, $p < 0.001$). Computer self-efficacy also partially mediated the relationship between readiness for change and intention to adopt assistive technology. The study highlights the critical role of lifelong professional development, institutional support, and strengthened teacher adaptability. Practical implications and strategies for stakeholders aiming to improve technology integration and inclusive educational practices are discussed.**

***Keywords*—readiness for change, computer self-efficacy, assistive technology, digital literacy, organizational change, inclusive education**

I. Introduction

In the context of Greece's secondary education system, teachers are increasingly called upon to integrate assistive technologies to address diverse learning needs and to align with ongoing transformation policies [1]. In today's technology-driven era, change is more of a rule than an exception, requiring organizations to be adaptable and flexible [2]. Technological and scientific advancements demand substantial transformations for the survival and growth of organizations and businesses [2, 3]. Schools, like any other organization, must respond to these new conditions, while facing growing pressure to integrate emerging technologies into teaching and learning [4, 5].

Recent digital transformation has reshaped the educational landscape, altering not only instructional methods but also the roles and responsibilities of educators [6, 7]. Teachers now confront new challenges: they must quickly adopt contemporary technological practices to meet their students' diverse learning profiles and needs—particularly through assistive technologies which support learners with difficulties or disabilities [8]. Consequently, teachers' readiness for change and perceived self-efficacy in using digital resources are critical determinants of whether educational technologies are adopted [5]. Therefore, investigating teachers' attitudes towards the acceptance of technology in their practices and their readiness for constant change and innovation in education is crucial for the successful integration of technology and improvement of learning achievements [8, 9].

The use of technology in education is now a fact; however, a significant research gap remains, regarding the role of teachers' readiness for change in the adoption of assistive technology. Prior studies have examined the benefits of technology in education [10, 11], curricular revision for technological integration [12], and teachers' concerns about technology [13]. However, far less is known about how readiness for change influences teachers' self-efficacy and, ultimately, their intention to implement assistive technologies in the classroom.

Understanding these relationships is crucial for the effective integration of assistive technology in school settings. Assistive technology undoubtedly provides valuable support for students with learning difficulties; however, its adoption largely depends on teachers' readiness for change, as well as their confidence and familiarity with using digital tools. This study's conceptual scheme draws from Bandura's [14] self-efficacy theory, Bouckenooghe *et al.* [2] readiness for change model and Davis' [15] Technology Acceptance Model. It posits that teachers with higher readiness for change are more likely to feel confident about using digital tools, which in turn increases their intention to adopt assistive technologies. Computer self-efficacy acts as both a direct predictor and a mediator in this relationship. This relationship is summarised in the study's conceptual framework (Fig. 1).

Cultural and institutional differences can influence technology adoption. For example, studies in Malaysia show that teachers' intentions to use technology are shaped by perceived usefulness, ease of use and social influence [16]. In Latin America, context specific barriers and drivers shape the adoption of AI and assistive tools in higher education [17].

Digital readiness reflects both organizational change adaptability and individual technological competence. According to the Unified Theory of Acceptance and Use of Technology (UTAUT), performance expectancy, effort expectancy and facilitating conditions jointly predict behavioural intention. Recent cross-cultural [15, 16] confirm that teachers with higher digital literacy display stronger

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innovation uptake when institutional support is present. Yet most studies overlook Assistive Technology (AT) tools such as Text-to-Speech (TTS) suites, smartpens, or AI-driven adaptive platforms—precisely the devices that empower students with disabilities. The present research fills this gap by linking readiness for change (and computer self-efficacy to teachers' intention to adopt assistive-technology.

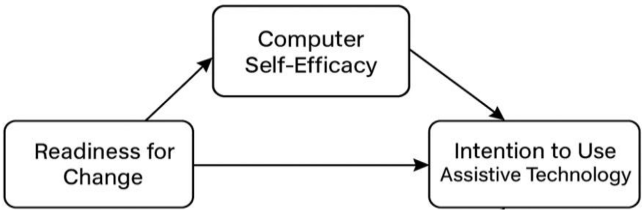

Fig. 1. Conceptual framework linking Readiness for Change (RFC), Computer Self-Efficacy (CSE) and Intention to Adopt Assistive Technology (INTAT).

According to existing literature, we already know the benefits of technology, the challenges of integration, and the general attitudes of educators' general attitudes toward technology. However, a systematic investigation of the links between readiness for change, self-efficacy, and intention to use assistive technology is still lacking**.** Therefore, examining teachers' attitudes toward technology acceptance and their readiness for innovation is crucial for successful integration. The present study addresses this need through three guiding Research Questions (RQs):

- RQ1. How is teachers' readiness for change related to their self-efficacy in using technology?
- RQ2. How does readiness for change affect their intention to use assistive technology?
- RQ3. What is the relationship between teachers' technological self-efficacy and their intention to use assistive technology in the classroom?

By analysing these factors together, the present study offers an advantage over previous research, which has tended to examine self-efficacy [13, 14] or the benefits of ICT in education in isolation [11].

The findings have practical implications for the educational community; identifying the key factors that strengthen teachers' readiness to adopt assistive technology can guide targeted interventions, such as professional development programmes, investment in technological infrastructure, and curriculum redesign. Because successful technology integration requires time, continuous training, and pedagogical adjustment [14, 15], this research contributes to the ongoing dialogue on creating a more inclusive, technologically supported learning environment.

The sections that follow review the literature on organisational change in schools, teachers' readiness for technological innovation, and the role of assistive technology in supporting students with learning difficulties, and then present the methodology, results, conclusions, recommendations, and limitations of the study.

II. Literature Review

A. Organizational Change, Readiness for Change and Digital Literacy in Education

Like all organisations, schools face constant internal and external pressures that demand adaptation and transformation [16, 17]. For change to be effective and sustainable, teachers should perceive it as beneficial, either in terms of improving student learning or enhancing their professional roles [17, 18]. Research shows that this perception is closely tied to their attitudes and beliefs, making readiness for change a key factor in both educational innovation and institutional sustainability [1, 19–21].

Schools today undergo organizational changes that are closely linked to digital literacy. This concept includes more than technical skills and involves cognitive, ethical, and social competences [22]. As schools transition to digital learning environments, it is essential for both teachers and the broader educational community to cultivate digital literacy skills so they can integrate technology into their pedagogical practices [23]. When, well integrated digital literacy improves instruction and prepares students for the digital world. Recent trends emphasize that digital literacy now includes competencies related to AI-powered learning environments and ethical data use [24].

Research on teachers' readiness for change has led to the development of various assessment tools, highlighting the evolution of this concept over time. One of the earliest contributions came from Giacquinta [25], who developed a readiness scale that emphasized the alignment between change initiatives and educators' goals. This was followed by the Receptivity to Change Inventory (RCI), originally developed by Hennigar [26] and later revised by Loup [27], which significantly contributed to understanding how individuals respond to change within educational organizations.

A more systematic and multidimensional approach was introduced by Piderit [28], who conceptualized readiness for change across three dimensions volitional behaviour, emotional reactions, and cognitive beliefs. Building on this framework, Bouckenooghe *et al.* [2] developed an expanded instrument that further refined the measurement of readiness by integrating these components. Later, Kondakci *et al.* [29] designed one of the few scales tailored specifically for education professionals, reflecting the growing need for context-specific tools in educational settings.

B. Readiness for Change and Technology Acceptance

The concept of readiness for change has its roots in organisational psychology and appears to have broad applications in the context of educational reform. The attitudes and beliefs of individuals within the organisation play an important role in the successful implementation of change [25]. In inherently complex organizations such as schools, achieving a high degree of readiness for change among both teachers and school administrators is of great essence, concerning the effective integration of new methodologies and technologies.

From this perspective, technology-acceptance theories provide valuable insights into teachers' willingness to adopt new educational tools. As an example, the Technology Acceptance Model (TAM) [15] suggests that the perceived usefulness and ease of use of a technology are key determinants of a positive attitude towards its adoption. Building on this, the Unified Theory of Acceptance and Use of Technology (UTAUT) [30] introduces additional factors, such as social influence and enabling conditions, to predict technology adoption in various contexts, including education. These theories provide a comprehensive understanding of the factors that influence teachers' adoption of technology and can assist in addressing resistance to technological change, as well as in formulating effective implementation strategies. Emerging technologies such as adaptive learning systems, virtual assistants and AI tutors are now being integrated in classrooms globally, requiring teachers to develop new forms of readiness [31].

Digital literacy is closely linked to technology acceptance, as educators with strong digital skills are more likely to adopt and integrate new tools into their practices, whereas insufficient skills may lead to resistance to educational reforms [32]. Although digital literacy is widely acknowledged as essential for educational reform, it is often narrowly viewed as a purely technical skillset, neglecting its broader socio-cognitive and pedagogical dimensions [33]. This gap underscores the need for targeted research on how factors such as readiness for change and computer self-efficacy influence the integration of digital technologies into educational practices.

C. Teacher Self-Efficacy and Digital Competence in Educational Technologies

Teachers' self-efficacy is defined as their capacity to perform teaching, related tasks [30, 31] and plays a crucial role in their willingness to integrate digital tools [4, 32]. However, despite the potential perceived benefits, challenges such as inadequate support and low confidence in their technological abilities, often hinder the practical application of technology in the classroom [20].

Consequently, enhancing teachers' digital literacy has been shown to strengthen their sense of self-efficacy for using technological tools, as it equips them with the necessary skills and self-confidence, thereby facilitating the integration of digital resources into pedagogy [34]. Research also shows that effective and tailored digital literacy training programs significantly improve teachers' self-perceptions of their ability to use educational technologies, which in turn leads to higher adoption rates [35]. As a result, promoting digital literacy is essential not only to increase teachers' technological capabilities, but also to enhance their overall self-efficacy and willingness to adopt new technologies in the classroom.

Teachers' computer self-efficacy has been extensively studied over the past two decades, beginning with foundational work by Compeau *et al.* [36], who explored the cognitive and motivational aspects of individuals' confidence in using digital technologies. Building on this, Paraskeva *et al.* [37] investigated the relationship between secondary education teachers' self-perception, attitudes and motivations concluding that previous experience with technology contributes to higher levels of self-efficacy.

Subsequent research by Ismail *et al.* [38] further confirmed a strong positive relationship between teachers' computer self-efficacy and their application of innovative technological practices in the classroom. Their findings highlighted that self-efficacy is closely tied to both the perceived usefulness and the perceived ease of use of technology factors that align with established technology acceptance models. More recently, Scherer and Siddiq [5] emphasized that computer self-efficacy remains a crucial predictor of effective technology integration in pedagogical contexts. Similarly, Stephen and Tawfik [39] argue that computer self-efficacy is perhaps the most decisive factor influencing educators' willingness to adopt educational technologies.

Collectively, these studies underscore the critical role of computer self-efficacy in supporting technology integration in education. They suggest that boosting teachers' confidence in using digital tools not only facilitates their professional development but also enhances the learning experience for students. However, despite the well-documented significance of self-efficacy, the literature has yet to sufficiently explore how it is shaped by broader psychological and organizational factors. This highlights the need for a comprehensive approach that investigates the dynamic interplay between teachers' attitudes, institutional support structurers professional-development practices, and the pedagogical use of digital literacy.

D. Learning Disabilities and Technology

Learning Difficulties (LD) are heterogeneous neurobiological disorders that affect the cognitive processes related to reading, writing, speech, logical thinking, and mathematics [35, 36]. These conditions can manifest even in individuals with high intellectual capabilities, impairing academic performance and requiring specialized educational approaches [40]. New technologies provide substantial support to learners with LD. For example, children with ADHD benefit from digital tools that enhance engagement and reading fluency [41]. Additionally, students with cognitive impairments can improve learning with digital tools such as speech synthesis, spell-checkers, and electronic dictionaries, which assist in reading comprehension and maintaining writing accuracy [42, 43].

Moreover, Computer-Based Instruction (CBI) has produced positive outcomes for students with autism, improving reading skills and phonological awareness while also enhancing verbal expression [44]. Virtual environments further reinforce social interaction skills [45]. Deaf students can likewise benefit from computer-based vocabulary programmes that incorporate sign language, enhancing both auditory and verbal skills [46].

The use of digital pens and Text-to-Speech (TTS) systems is also positively associated with improved learner performance. Note-taking is a critical academic skill and can be particularly challenging for students with LD, who often struggle to keep pace with lessons and to organise information accurately [47]. Assistive technology helps to bridge this gap. A typical example is the Livescribe Smartpen, which simultaneously records audio and handwritten notes; through its *Paper Replay* function, the user can tap any point in the text to hear what was said at that moment [48]. This device has been associated with positive outcomes in understanding, organizing, and storing information, offering students more independence and improved academic performance [49]. Students with dyslexia and other language-learning disabilities, in particular, benefit because the device enhances both auditory and visual working memory [48]. Similarly, Text-To-Speech (TTS) tools, which convert text into synthesized speech, are an essential aid for students with reading difficulties. TTS reduces the cognitive load of reading and enhances comprehension. Research shows that these tools improve reading fluency, vocabulary and understanding [50]. They also increase student participation, self-confidence and active engagement [51]. Personalisation options—such as voice, rate, font or colour—allow adaptation to individual needs, making the technology flexible, accessible and well-suited to personalised support [52].

Adaptive learning tools likewise offer promising prospects for supporting students with LD [53]. Recent EdTech advances, including AI-based tutoring systems and predictive learning analytics, are being piloted in inclusive classrooms in countries such as South Korea and Norway, showing measurable gains in engagement and individualised support [54]. These tools leverage artificial intelligence and data analytics to personalise learning paths based on each student's performance, allowing real-time adjustment of content difficulty, pacing and feedback [55, 56]. This approach has been shown to enhance engagement, academic achievement, and self-regulation particularly in inclusive settings [57]. Overall, digital technologies play a crucial role in education, providing personalized support for individuals with LD, underscoring the need for ongoing research and implementation of innovative tools.

E. Teachers and Assistive Technology

The use of assistive technology by educators rises when they receive adequate training in both preservice programmes and ongoing professional development [44, 56]. Thus, teacher preparation in the effective use of technology is essential, because technology alone does not ensure learning. Its impact depends on how teachers apply it in the classroom [55, 56]. Although integrating assistive technology is not always feasible, teachers are generally willing to be trained-primarily to support their students [42, 47].

In public education, assistive technology should be accessible as part of special education services [48, 49]. Schools therefore need to be equipped with appropriate tools to support students in need [58]. Equally important is that general-education teachers know how to integrate technology into the curriculum to address learning challenges [4, 51].

Digital literacy is crucial for integrating assistive technology in classrooms. Studies highlight its connection with organisational change, readiness for change, and the acceptance in education [33]. Teachers' self-efficacy and openness to new technologies are key drivers of educational innovation [59]. Effective implementation also requires targeted training and institutional support. Digital literacy equips educators to apply technology meaningfully in teaching [60]. Frameworks such as UNESCO's ICT Competency Framework for Teachers and the EU's DigCompEdu model have provided global benchmarks to support educator training and policy alignment in diverse educational contexts from Finland to Malaysia [61].

F. Studies Related to the Use of Assistive Technology in the Classroom

A systematic review by Fernández-Batanero *et al.* [8] emphasised that assistive technology enhances accessibility and inclusion for students with disabilities. However, barriers such as limited teacher training and a lack of awareness remain significant [62]. Teachers' use of assistive tools is strongly influenced by their knowledge and skills [63]. Obstacles such as insufficient training and experience continue to exist, with teachers reporting a need for further professional development [57, 64]. Despite its benefits high cost and limited access still hinder implementation [65].

Teachers' proficiency in assistive technology depends largely on training and development opportunities [66]. Special education teachers may receive some training, but ongoing support is scarce [59, 67]. Furthermore, initial teacher education is often inadequate, resulting in low adoption in classrooms [68]. Strengthening university-level training is crucial to meet today's educational demands [69, 70].

The literature review has led to a deeper understanding of the concepts and interrelationships between organizational change, readiness for change, and the acceptance of technology in the education sector. Teachers' self-efficacy and their readiness to adopt new technologies play an important role in achieving successful educational transformation. Furthermore, the effective integration of assistive technology requires targeted professional development and institutional support. Despite the progress of studies regarding computer self-efficacy and readiness for change, research examining these elements specifically within the context of digital transformation and particularly in the integration of assistive technologies, remains limited. Based on insights from the literature review, the following section will outline the methodological framework used to examine teachers' readiness for change and technology adoption in educational settings, focusing on the research design, data collection, and analytical approaches.

III. MATERIALS AND METHODS

A. Research Design

The quantitative research design was considered the most appropriate approach, as it meets the need for a valid, objective, and measurable investigation of the phenomena under study [71]. The study relied on a structured questionnaire consisting of closed-ended questions, which were formulated clearly and understandably, and followed a predefined logical order [72]. This choice facilitates the collection of reliable primary data and allows for the participation of a large number of teachers, thereby enhancing the generalisability of the results to the target population [73]. At the same time, the quantitative approach provides the opportunity to apply statistical methods to analyse the intensity and direction of relationships between variables. This methodology aligns with the research objectives, which were informed by a literature review to identify both the independent and dependent variables and formulate the research hypotheses, aiming to investigate causal and correlational relationships [74].

B. Population and Sampling

The participants in this study totaled three hundred and nine secondary education teachers, who were selected through random sampling. to minimise selection bias. Of these, twenty-seven received the questionnaire in printed form, while the remaining two hundred and eighty-two (282) completed a digital version. The study was conducted in four public high schools in the western Thessaloniki area, where a total of ninety questionnaires were distributed on-site, proportional to the number of teachers at each school. Digital questionnaires were e-mailed to teachers to whom it was impossible to deliver the questionnaire in person. Additionally, a common email was sent to all secondary education addresses across Greece, requesting that the digital questionnaire be forwarded to the schools (middle and high schools) under their jurisdiction. Comparing the total number of distributed questionnaires (both printed and digital) reveals the response rate from the teachers was low, given that the electronic questionnaire was sent to almost every secondary school in Greece. For context, the total number of secondary-education teachers in Greece for the school year 2021–2022 school year was approximately 70,253. Of the printed questionnaires, only 30% were returned fully completed (27 out of 90).

However, the relatively low response rate may limit the generalisability of the findings, the obtained sample size (N = 309) remains statistically adequate for exploratory factor analysis and SEM. The combined use of printed and digital questionnaires was intended to increase response opportunities across different contexts (urban, rural) and overcome practical constraints.

The questionnaire was originally distributed in Greek and subsequently translated into English by two professors of English Philology. The translated version was then reviewed by two professors of Greek Philology to ensure linguistic and conceptual accuracy. Furthermore, it was administered to five individuals from different professional backgrounds for completion and validation. The data from the printed questionnaires were collected from May 15 to June 10 of the 2021–2022 school year, while additional time was given for the completion of the digital questionnaires, specifically until June 17 of the same year.

C. Research Hypotheses

From the literature review, three research hypotheses emerged:

H1: Teachers' readiness for change positively correlates with their self-efficacy in computer use.

H2: Teachers' readiness for change positively correlates with their intention to use assistive technology.

H3: Teachers' self-efficacy in computer use positively correlates with their intention to use assistive technology.

D. Measurement Instruments

To test the research hypotheses, a five-point Likert scale was used. Study participants were asked to select one of the answers from the scale, which ranges from "1" to "5". On five-point scales, respondents can choose either a neutral position or a clear position in the direction they prefer. These scales are widely used because they allow the respondents to adopt either extreme or more moderate positions. In addition, five-point scales are characterized by their efficiency and brevity both in space and time [75]. Therefore, the five-point Likert scale achieves a balance between detail and simplicity, largely capturing and exploring participants' views. Contrary to the overly simplistic three-point scale or the difficult to understand seven-point scale, it achieves good reliability and validity while being easy to analyze and reducing the phenomenon of central tendency [76]. In this study, participants were asked to select one of five responses for each question section, with the following values: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree.

Readiness for Change Scale: The readiness for change was measured using a scale consisting of a total of thirteen items, which were divided into three sub-factors. Each question on a scale is considered an item or statement [75]. The scale adopted was based on the tool created by Bouckenooghe, Devos, and Van Den Broeck [2], who, as mentioned earlier, studied readiness for change within a three-dimensional framework, which includes emotional readiness, cognitive readiness, and intentional readiness, in the context of their research on attitudes toward change.

In this study, the total number of questions from the original scale was thirteen, while the items selected after EFA analysis were seven. The first factor, emotional readiness for change, included the statements: "I experience change as a positive process," "I feel good about changes," "I find changes revitalizing," and "I somehow resist changes" (R). The (R) indicates that this specific question is reversed. For the second factor, the EFA showed that none of the items could be retained. Consequently, the cognitive readiness factor was completely excluded following exploratory factor analysis (EFA) due to low factor loadings and conceptual ambiguity within the Greek educational context, suggesting potential redundancy or misalignment with local teacher perspectives. For the third factor, the terms were: "I wish to commit to the change process," "I am willing to make a significant contribution to the change," and "I am willing to be heavily involved in the change process." The Cronbach's Alpha coefficient values for emotional readiness for change and intentional readiness for change were 0.867 and 0.843, respectively, while for the overall readiness for change scale, it was 0.881. The Cronbach's Alpha statistical test allows us to draw conclusions about the consistency of the questionnaire items. When the values of the test are above 0.70, they are traditionally considered adequate [63, 77].

Computer Self-Efficacy Scale: Self-efficacy is grounded in the theoretical framework of social-cognitive theory, which focuses on the continuous development and practice of individuals [78]. According to the social-cognitive perspective, self-efficacy refers to the individual's perception of their ability to successfully complete various tasks. As Bandura [14] points out, questions that measure self-efficacy need to have a specific structure; because self-efficacy is related to the respondent's perceived ability, questions should be phrased in terms such as "I can" or "I am able to" to emphasize and make it clear that they refer to personal abilities.

To measure the level of self-efficacy, the scale developed by Howard [79] was used, which includes twelve statements. This scale was chosen because it is a validated and reliable tool, with a strong theoretical basis. The twelve statements assess different aspects of self-efficacy, and the clarity and ease of understanding of the questions facilitate both participants' responses and the interpretation of the results by the researchers. In addition, the use of the scale in previous studies allows data comparison, while its broad application makes it suitable for various research contexts. Finally, its completeness and effectiveness ensure high participation rates and data reliability.

In this study, EFA showed that all twelve statements were suitable for use. The items used were as follows: "I am able to solve complex problems that may arise when using a computer if I try hard enough," "If my computer has a problem, I can find a solution," "It is easy for me to complete various tasks on the computer," "I am confident that I could handle unexpected situations with the computer," "I can operate most computer programs if I make the necessary effort," "I remain calm when faced with difficulties on the computer," "When I encounter a problem with the computer, I can usually solve it in multiple ways," "I am able to manage any issue that arises while using the computer," "When I fail to complete a task, it makes me try harder," "I am a person who relies on my computer skills," "There are few things I cannot accomplish on the computer," "I persist and complete most tasks on the computer." Cronbach's Alpha coefficient was 0.951, indicating excellent internal consistency and confirming the methodological appropriateness of the tool for the study population.

Intention-to-Use Assistive Technology Scale: To study the intention to use assistive technology in the classroom, a combination of two scales was chosen, the scale by Garcia and Seevers [80] and that developed by Pousada García *et al.* [81]. This combination provides a comprehensive and multidimensional approach to the topic. The Garcia and Seevers scale consists of twenty (20) questions that focus on the attitudes of general-education teachers, regarding the use of assistive technology by students with learning disabilities. Similarly, Pousada García et al. developed a questionnaire in which the section for teachers includes four questions aimed at studying their professional views on ICT integration and in assessing the academic progress of students who use assistive technologies. This combination is particularly beneficial, as it allows exploration of both teachers' attitudes and perceptions and the effectiveness of assistive technologies in the learning process. Additionally, it covers different aspects of the topic, enhancing the validity and comprehensiveness of the research. Furthermore, utilizing tools that have already been validated in previous studies enables data comparison, thereby strengthening the generalizability of the findings.

Therefore, teachers' intention to use assistive technology was measured using twenty-four statements, sixteen of which were retained after EFA for further statistical analysis. The items included: "I believe that the number of students eager to use assistive technology devices in my classroom is increasing," "I believe that students using assistive technology devices will perform better," "I think that assistive technology devices help students work more independently," "I believe that the lack of teacher training in the use of these devices is a significant barrier," and other related items. The high Cronbach's Alpha coefficient (0.939) confirms the internal consistency and reliability of the final scale.

Throughout the research, no information was requested that could reveal their identity, such as names or specific demographic details. Participants were fully informed of the study's purpose and voluntarily gave explicit consent. Furthermore, they were made aware that they could withdraw from the research process at any time, without any consequences. Regarding the research data, both physical and digital records will be securely stored and accessible only to the researcher. All responses were anonymized prior to analysis and no personal or identifying information was collected at any stage. Only aggregate statistical findings will be published. The collected data were used exclusively for statistical analysis to test the study hypotheses, and no individual responses were accessed or interpreted separately.

E. Data Analysis Techniques

Two statistical tools were used to analyse the research data: SPSS (Statistical Package for the Social Sciences) and SmartPLS (Partial Least Squares Structural Equation Modeling), which were chosen due to their complementary functionality in interpretation and confirmation of the findings. Statistical analysis was conducted using SPSS and SmartPLS, which are appropriate tools for both exploratory and confirmatory factor analysis in social science research.

Exploratory Factor Analysis: the SPSS was mainly used for descriptive statistical analysis and Exploratory Factor Analysis (EFA), allowing identification of the variables' internal structure and key underlying factors. Indicators such as the Kaiser-Meyer-Olkin (KMO) index and Bartlett's test of sphericity contributed to the assessment of the suitability of the sample for factor analysis [82]. SPSS is a reliable, widely used, and user-friendly platform, making it ideal for quantitative studies in psychology, sociology, and educational research [63, 82, 83], which are most relevant to the present study.

Structural Equation Modeling: Meanwhile, SmartPLS was used for confirmatory factor analysis and Structural Equation Modeling (SEM), as it provides greater flexibility in the analysis of complex conceptual models, especially when dealing with small sample sizes (as in the present study) or non-normally distributed data [72, 73]. This software supports the analysis of both reflective and formative constructs [84], while providing extensive statistical tools for assessing the validity and reliability of the model, such as Composite Reliability (CR), Average Variance Extracted (AVE), and Discriminant Validity based on the Fornell-Larcker criterion [85]. In addition, it incorporates predictive mechanisms, such as bootstrapping, enhancing the interpretation and statistical significance of relationships [73, 76].

The combination of these two tools provided a multidimensional and methodologically robust approach, allowing both exploration of the data structure and confirmation of the underlying theoretical relationships. Therefore, the simultaneous use of SPSS and SmartPLS maximized the validity and reliability of the research results and made full use of the available sample.

IV. Findings

A. Characteristics of the Sample Participants

The sample of the study consisted of 192 women and 117 men, with the largest percentage (63.4%) falling within the age group of 31–45 years. In terms of academic qualifications, 53.4% of the participants held a Master's degree, 40.1% held a university degree, and 6.5% had a Ph.D. Regarding their employment status, the majority of participants were permanent teachers, with 84.1% working in general education and 15.9% in special education (see Table 1).

Table 1. Demographic data

Items		N	%
Gender	Male	117	37.9%
	Female	192	62.1%
Age	22–30	7	2.3%
	31–45	106	34.3%
	46 & above	196	63.4%
Educational Level	Bachelor’s Degree	124	40.1%
	Master’s Degree	165	53.4%
	Ph.D.	20	6.5%
Type of Employee	Permanent (with a permanent position)	217	70.2%
	Permanent (with a secondment)	20	6.5%
	Substitute	62	20.1%
	Hourly	1	0.3%
	Other	9	2.9%
Work in Special Education	Yes	49	15.9%
	No	260	84.1%

B. Exploratory Factor Analysis (EFA)

The statistical software IBM SPSS Statistics 23 was used to perform the Exploratory Factor Analysis (EFA) of the questionnaire that had been created. One of the first steps in processing the data was to reverse-code the relevant questions (Recode) based on their meaning. This recording process allows for the modification of a variable—or the creation of a new one—alongside the existing variable, with the necessary transformations [86]. Additionally, textual elements in the data were converted into numerical values.

The EFA procedure grouped the survey questions into appropriate factors, aiming to identify patterns and correlations among the variables. This step also served as a data-cleaning method, eliminating variables that were not significantly correlated. The variables were then sorted into corresponding factors (see Table 2). It is recommended that factor-loading values be greater than 0.50. Apart from the Pattern Matrix values, the loadings presented in Table 3 were also checked to reflect the extracted variance of each item. Loadings above 0.50 are considered more suitable, while values of 0.30 or below were excluded from the analysis, because the “Suppress Small Coefficients” option was selected, setting the threshold at 0.30. Intermediate values between 0.30 and 0.50 may need to be excluded, but their inclusion is not strictly prohibited.

Two variables, AXY5 and AXY12, appeared to load on two factors. However, they were not removed because they initially belonged to the correct factor, and their shift to another factor showed a difference greater than 0.25 (AXY5: 0.793 − 0.362 = 0.431 > 0.25; AXY12: 0.736 − 0.308 = 0.428 > 0.25). Moreover, they did not cause any issues with the other variables (see Table 2).

Table 2. Pattern matrix

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
XYT13	0.790				
XYT22	0.776				
XYT16	0.775				
XYT17	0.772				
XYT6	0.766				
XYT23	0.748				
XYT7	0.739				
XYT20	0.730				
XYT18	0.681				
XYT21	0.672				
XYT5	0.663				
XYT12	0.644				
XYT15	0.637				
XYT9	0.613				
XYT14	0.608				
XYT11	0.579				
AXY4		0.881			
AXY7		0.881			
AXY6		0.851			
AXY2		0.820			
AXY8		0.809			
AXY5		0.793			0.362
AXY10		0.790			
AXY3		0.749			
AXY11		0.738			
AXY12		0.736			0.308
AXY1		0.720			
AXY9		0.592			
EA2			0.866		
EA1			0.859		
EA3			0.782		
REA4			0.591		
EA13				0.879	
EA12				0.798	
EA11				0.542	

Table 3. Communalities

Variable	Initial	Extraction
EA1	0.704	0.760
EA2	0.716	0.783
EA3	0.673	0.693
EA12	0.661	0.707
EA13	0.684	0.802
AXY1	0.611	0.546
AXY2	0.685	0.662
AXY3	0.635	0.625
AXY4	0.752	0.759
AXY5	0.710	0.736
AXY6	0.739	0.726
AXY7	0.796	0.801
AXY8	0.722	0.716
AXY9	0.480	0.394
AXY10	0.655	0.630
AXY11	0.622	0.560
AXY12	0.720	0.696
REA4	0.378	0.350
XYT5	0.510	0.478
XYT6	0.626	0.580
XYT7	0.625	0.587
XYT9	0.441	0.357
XYT11	0.400	0.298
XYT12	0.608	0.563
XYT13	0.635	0.593
XYT14	0.522	0.455
XYT15	0.465	0.396
XYT16	0.625	0.574
XYT18	0.572	0.496
XYT22	0.576	0.563
XYT23	0.703	0.673
EA11	0.521	0.489
XYT21	0.666	0.664
XYT17	0.728	0.692
XYT20	0.633	0.601

In EFA, when an item loads onto more than one factor, its removal is not necessarily required. If the difference between the primary and secondary loading exceeds 0.20–0.25, the item is considered to be meaningfully associated with a specific factor and can be retained. As noted by Hair *et al.* [87], the retention of such items is both statistically and theoretically justified, thereby supporting the validity of the factor model.

The analysis also included the Kaiser-Meyer-Olkin (KMO), which measures the adequacy of the sample size. The KMO value should be greater than 0.60 [88]; in this study was 0.939, indicating excellent adequacy (see Table 4). Furthermore, Bartlett's Test of Sphericity was performed to determine whether the correlations among variables were sufficiently strong to justify factor analysis. A significance level (Sig.) of less than 0.05 is required; the test result (0.000) confirmed that the data are suitable for factor analysis.

Table 4. KMO and Bartlett's test

Measure	Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.939
Bartlett's Test of Sphericity	Approx. Chi-Square: 7624.431
Degrees of Freedom (df)	595
Significance (Sig.)	0.000

In conclusion, the Exploratory Factor Analysis results revealed the grouping of survey items into five distinct factors, as shown in the Pattern Matrix (see Table 2), clearly outlining constructs of readiness for change (emotional and intentional), computer self-efficacy, and intention to use assistive technology. These factors align closely with theoretical expectations, thus confirming the factorial structure. Furthermore, the analysis confirmed the adequacy of the data and the suitability of factor analysis, with high values in both the KMO and Bartlett's Test of Sphericity, ensuring that the data structure was appropriate for this method.

This analysis was necessary to validate the internal structure of the measurement tools and ensure that the selected items accurately reflected the theoretical constructs of readiness for change, computer self-efficacy and intention to use assistive technology.

C. Structural Equation Model (SEM)

The structural equation model was constructed using the statistical software SmartPLS [89]. In the first phase, Construct Reliability and Validity were examined, where the results confirmed the Cronbach's Alpha values previously found during the EFA process in SPSS, with only minor differences (see Table 5).

Additional information is provided regarding the composite reliability and convergent-validity indicators, whose values exceed the minimum acceptable thresholds of 0.80 and 0.50, respectively (see Table 5). Consequently, it is concluded that the measurement of the variables is robust [72]. These values confirm that the measurement model has good convergent validity and internal consistency, which are essential conditions for reliable structural modeling. Composite reliability is regarded as a more refined form of Cronbach's Alpha coefficient [87].

The statistical analysis revealed that the intention to use technology was supported by a satisfactory level of explanatory power, as the variable Intention to Use IT presented an R^2 value of 0.261, while Self-efficacy in computer Use had an R^2 value of 0.105. Consequently, the proposed model explains 26.1% of the variance in the intention to adopt assistive technology and 10.5% of the variance in computer self-efficacy percentages considered acceptable and sufficient within the context of social and educational research [87].

Table 5. Convergent validity

Items	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Self-Efficacy in Computer Use	0.952	0.951	0.622
Readiness for Change	0.881	0.883	0.521
Emotional Readiness for Change	0.867	0.873	0.635
Intentional Readiness for Change	0.844	0.845	0.645
Intention to Use IT	0.942	0.941	0.507

Moreover, the results indicate that readiness for change has a medium effect size on the intention to adopt ICT (f^2 = 0.181), highlighting its substantial contribution to predicting this intention. Additionally, the same variable influences computer self-efficacy with a small-to-medium effect size (f^2 = 0.117). Finally, self-efficacy affects the intention to use ICT with a small effect size (f^2 = 0.070). These findings reinforce the theoretical foundation of the model and emphasize the central role of readiness for change in shaping both self-efficacy [14] and the intention to integrate assistive technology into educational practice [14, 25].

Following the reliability and validity tests, the theoretical relationship model was constructed using the SmartPLS statistical software (see Fig. 2).

Emotional Readiness for Change (ERC) and Intentional Readiness for Change (IRC) are reflective variables with respect to their definitions, while simultaneously serving as formative indicators of overall readiness for change. Additionally, the level of self-efficacy in computer use functions as a mediating variable in the relationship between readiness for change and the intention to use assistive technology (see Fig. 2). Consequently, because the theoretical model involves third-order, second-order, and first-order factors, it is necessary to implement an additional step—the two-step approach [90] (see Fig. 3).

Subsequently, to analyze and test the theoretical hypotheses of the proposed model, a bootstrapping procedure was implemented with 1,000 sub-samples. This process enables the examination of potential correlations among the factors under study [89]. The t-statistic value will indicate statistically significant relationships, which should be greater than 1.96, while the p-value must be less than 0.05. The analysis displayed the relationships between the variables through the original sample, the sample mean, the standard deviations (STDEV), the T-statistics and the p-values. The results showed strong, statistically significant relationships. Specifically, teachers' self-efficacy in computer use positively influenced their intention to use Assistive Technology (AT) with a coefficient of 0.240; the *t*-statistic (4.720) and *p*-value ($p = 0.000$) confirmed the reliability of this effect. In addition, readiness for change positively affected self-efficacy, with a coefficient of 0.324, indicating a robust, significant relationship ($t = 6.414$, $p = 0.000$). The strongest effect was observed between readiness for change and the intention to use assistive technology, yielding the highest coefficient (0.463), and extremely high statistical significance ($t = 8.144$, $p = 0.000$).

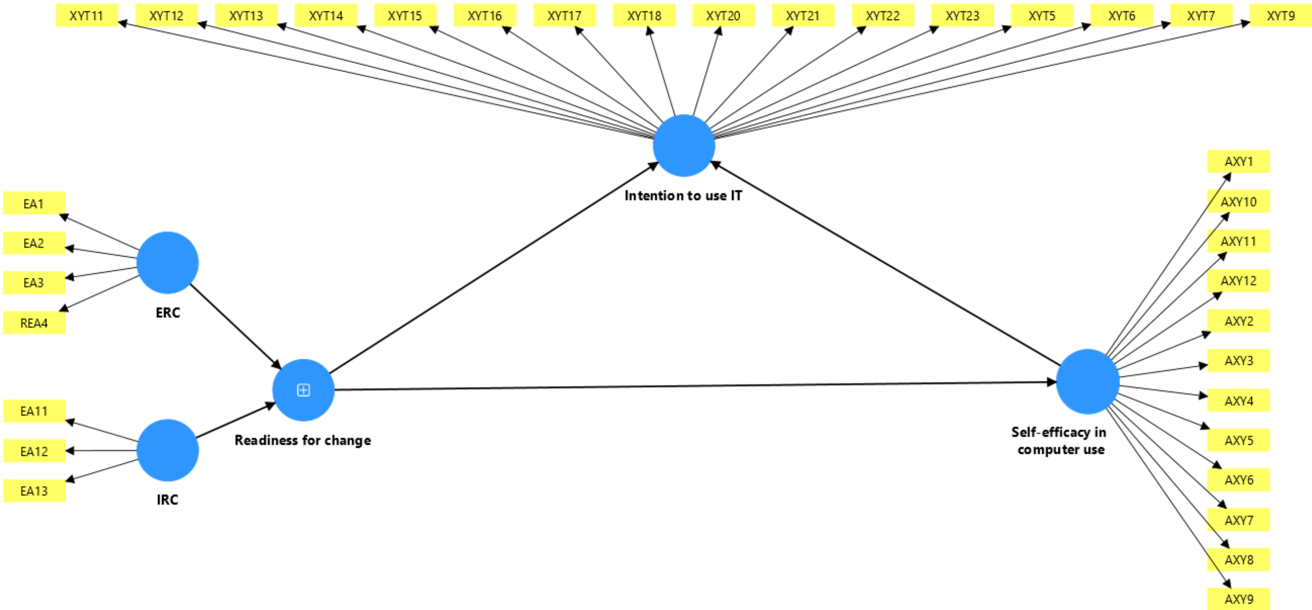

Fig. 2. Proposed Model of the relationships among readiness for change, computer self-efficacy, and intention to use assistive technology. (Note: This diagram illustrates the direct effects of readiness for change on both self-efficacy and intention to adopt assistive technology, as well as the mediating role of self-efficacy.)

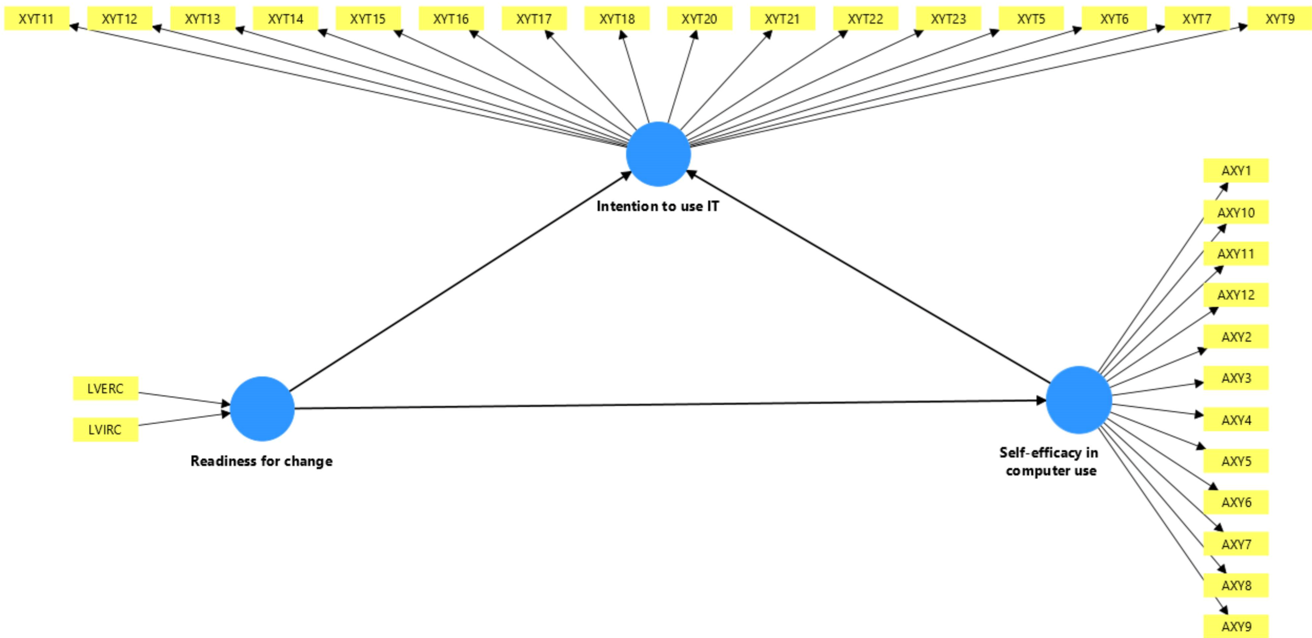

Fig. 3. Two-step approach model (Diagram of the proposed PLS-SEM model with latent and observed variables. Path estimates were evaluated using 1,000 bootstrap samples). (Note: The two-step SEM model visually captures the hierarchical relationships among first, second and third order constructs, confirming the mediating role of computer self-efficacy.)

Table 6. Total effects

Items	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	*P*-values
Computer Self-Efficacy → Intention to Use AT	0.240	0.245	0.051	4.720	**0.000**
Readiness for Change → Computer Self-Efficacy	0.324	0.329	0.050	6.414	**0.000**
Readiness for Change → Intention to Use AT	0.463	0.470	0.057	8.144	**0.000**

Considering the above, the results confirmed all hypotheses. These findings confirmed that readiness for change is a key factor shaping both computer self-efficacy and intention to use assistive technology. Furthermore, they highlighted the role of computer self-efficacy as a partial mediator in the relationship between readiness for change and intention to use AT, underscoring the importance of interventions aimed at enhancing users' self-efficacy (see Table 6).

V. Result and Discussion

The present study focused on three key aspects: the level of readiness for change among secondary education teachers, their self-efficacy in computer use, and how these two factors relate to their intention to use assistive technology in the classroom. A literature review revealed similar findings, leading to the formulation of three hypotheses. Based on these hypotheses, both direct and indirect relationships between readiness for change, self-efficacy in computer use, and the intention to use assistive technology were examined. Table 7 presents the analysis of direct relationships, while Table 8 provides insights into indirect relationships.

A. Direct Effects

Table 7 presents the path coefficients and significance levels for the tested hypotheses. The findings indicate strong and statistically significant relationships, as all hypotheses were supported. Specifically, the direct relationship between readiness for change and self-efficacy in computer use was found to be positive and statistically significant (Path Coefficient = 0.324, $p = 0.000 < 0.001$, $t = 6.414$). Similarly, the relationship between readiness for change and the intention to use assistive technology was also significant (Path Coefficient = 0.385, $p = 0.000 < 0.001$, $t = 6.249$). Finally, the association between self-efficacy in computer use and the intention to use assistive technology was confirmed as positive and statistically significant (Path Coefficient = 0.240, $p = 0.000 < 0.001$, $t = 4.720$). Therefore, hypotheses H1, H2, and H3 are supported.

B. Indirect Effects

Table 8 presents the specific indirect effects, demonstrating a statistically significant mediation effect. Specifically, the sole indirect relationship identified in the statistical analysis was significant ($t = 3.752 > 1.96$, $p = 0.000 < 0.001$). This finding highlights a positive correlation among all three examined variables, indicating that readiness for change influences the intention to use assistive technology, with self-efficacy in computer use acting as a mediator.

Table 7. Path coefficients

Hypothesis and Path	Original Sample (O)	Sample Mean (M)	T Statistics (|O/STDEV|)	Hypothesis Support
Readiness for Change → Computer Self-Efficacy	0.324	0.329	6.414***	H1 Supported
Readiness for Change → Intention to Use AT	0.385	0.390	6.249***	H2 Supported
Computer Self-Efficacy → Intention to Use AT	0.240	0.245	4.720***	H3 Supported

Note: *Significance levels: *$p < 0.05$, **$p < 0.01$, **$p < 0.001$, ns = not significant

Table 8: Specific indirect effects

Indirect Pathway	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	*p*-values
Readiness for Change → Computer Self-Efficacy→ Intention to Use Assistive Technology	0.078	0.081	0.021	3.752	0.000

These results underscore the critical role of readiness for change in shaping both self-efficacy in computer use and the intention to integrate assistive technology in teaching practices. Moreover, they emphasize the importance of interventions aimed at enhancing teachers' self-efficacy with digital teaching tools, as this factor mediates the adoption of assistive technology in educational environments. This underscores the need for consistent support—through targeted training programs and ongoing assistance—to strengthen teachers' digital skills. At the same time, education policy-makers must create environments that promote the development and implementation of new technologies, thereby ensuring the effective integration of assistive technology into teaching practices.

VI. Conclusion

The findings of this study revealed that readiness for change and self-efficacy in using computers are intertwined, influencing teachers' intention to adopt assistive technologies in their classrooms. Therefore, digital literacy appears to be a key professional asset and should be strengthened through targeted actions that align with teachers' broader professional-development goals.

Teachers' readiness for change emerged as a critical factor in the acceptance and integration of technological innovations in education. Empirical validation of Weiner's Organizational Readiness for Change model [91] highlights the importance of strengthening teachers' internal commitment to reform processes. Furthermore, Rogers' theory of innovation diffusion [92] was supported, as teachers with higher levels of readiness for change tend to perceive technological interventions compatible with their teaching practices and are therefore more receptive to their adoption. At the same time, self-efficacy in computer use mediated the relationship between readiness for change and teachers' intention to adopt assistive technologies, which is consistent with the principles of Bandura's Social Learning Theory [14]. These findings underscore that teachers' confidence in their digital abilities is a key prerequisite for the effective and creative use of technological innovations.

Given constant technological and social changes, therefore, enhancing the adaptability and professional development of teachers is imperative. Digital literacy is no longer just a technical ability, but a multifaceted set of cognitive, metacognitive and socio-emotional skills, encompassing the critical evaluation, pedagogical application, and creative use of digital technologies in the educational environment.

In conclusion, cultivating positive attitudes towards change and strengthening digital literacy through organized and targeted education are fundamental prerequisites for the successful integration of assistive technologies into educational practice. This integration not only strengthens the technological readiness of teachers, but also substantially promotes the educational equity and the development of inclusive, participatory, and high-quality learning environments.

Building on these conclusions, several practical recommendations can be drawn to guide both educational practice and policy. On a practical level, this study provides several clear recommendations for educational institutions. More specifically, school principals should cultivate a supportive school culture, aiming to encourage technological innovation and continuous professional development within the educational community. This can include the establishment of school-based innovation teams, regular, teacher-led technology workshops, and feedback mechanisms through which teachers can share challenges and propose practical solutions.

Additionally, there is a great need to design and implement targeted training programs to enhance teachers' digital literacy. These efforts can directly improve their confidence in the use of assistive technology. Such programs should be hands-on, focused on real classroom scenarios and co-designed with experienced teachers to ensure relevance and applicability. Moreover, adequate supporting infrastructure, including reliable access to technological resources and collaboration with technical support staff, is a necessary condition for the effective adoption of technology.

Furthermore, potential peer mentoring can leverage teachers' existing experience to enhance self-confidence and promote collaborative professional development. Schools can establish structured mentoring schemes pairing digitally confident teachers with less experienced peers. These can be supported by scheduled observation opportunities and shared planning time. Policymakers, for their part, should design context-specific professional development interventions aligned with teachers' experiences and needs, ensuring sustainable and inclusive educational transformations. These initiatives require coordination between school leadership and education authorities, with dedicated time, resources and institutional commitment to professional learning.

Overall, this study highlights the crucial importance of readiness for change and computer self-efficacy as vital components in the adoption of assistive technology. Future work should place greater emphasis on special-education teachers. Future research needs to further examine the specific characteristics of teachers and contextual factors that may facilitate technology adoption, contributing to a more detailed understanding of educational innovation processes. Furthermore, this research provides the motivation and indicates the need for future field studies to include qualitative measures for a more holistic approach. Implementing studies in authentic school settings would provide more tangible and specific results on how, through organizational changes, assistive technology can be integrated into mainstream schools and adopted by teachers. Another difference that some researchers have identified is that rural schools often face unique challenges compared to urban schools [93]. Comparing these two settings could be of research interest and reveal new information regarding teachers' readiness for change, computer proficiency, and the integration of assistive technology in the classroom.

While these recommendations provide valuable directions for practice and future research, it is important to acknowledge certain limitations of the present study that may inform the interpretation of its findings. A key limitation of this study was the relatively small sample size (n = 309), which reduces statistical power and generalizability, despite random sampling. Nevertheless, the model's results are supported by the reported effect sizes, which indicate meaningful and statistically significant relationships among the variables. Specifically, the f^2 values suggest a moderate effect for the relationship between readiness for change and intention to use technology (f^2 = 0.181) and small-to-moderate effects for the remaining paths in the model. The R^2 values 26.1% for intention to use and 10.5% for self-efficacy are considered acceptable within the context of social and educational research. These values strengthen the external validity of the findings and highlight their practical significance, despite the sample limitations.

The response rate was low for both paper and electronic questionnaires, although efforts were made to reach all secondary schools nationwide. Low participation may reflect teachers' reluctance to engage in research or the perception that the questionnaire was lengthy and complex. This could affect the objectivity and representativeness of the sample, as responses may have come primarily from educators already positive toward technology or innovation.

Voluntary participation may also have introduced selection bias, as the final sample might reflect an overrepresentation of educators with favourable predisposition towards educational innovation and technology. Additionally, in certain school units, the possibility of group discussion during questionnaire completion could have influenced responses due to normative pressures or social desirability bias. As with all self-report measures, the potential for such biases cannot be entirely excluded.

Also, despite efforts to include different secondary education settings, the majority of respondents came from general education, while special education teachers were underrepresented (15.9%). However, this percentage is consistent with the actual proportion of special education staff working in mainstream schools in Greece, where many are assigned to inclusion Units or Parallel Support roles. Therefore, although numerically limited, their representation is considered contextually adequate. Nonetheless, future studies should aim to further explore this subgroup in order to address the unique challenges associated with inclusive education and assistive technology integration. Future studies should consider strategic oversampling of special education teachers to ensure stronger representation and to better capture the diversity and complexity of their experiences with assistive technology adoption.

Another limitation was the exclusive focus on Greek teachers, which limits the cross-cultural relevance of the findings. Institutional, educational, and cultural differences could have significantly affected readiness for change, self-efficacy, and technology adoption. Gender imbalance in the sample (62.1% women, 37.9% men) might also restrict conclusions regarding gender-related differences in these variables.

The distribution of digital questionnaires through schools might have unintentionally excluded teachers in rural or underserved areas with limited digital access. Finally, the exclusive use of quantitative methods might have overlooked valuable qualitative insights. Incorporating interviews or focus groups could deepen understanding of teachers´ motivations, challenges and experiences. Future research is advised to consider mixed recruitment methods to improve accessibility and representation.

Conflict of Interest

The authors declare no conflict of interest.

Author Contributions

MS contributed to the critical analysis of the manuscript, actively participated in discussions, provided substantial input during the revision process, and contributed to the writing of the paper. MT prepared the theoretical framework of the study, conducted the research and statistical data analysis, discussed the findings, and drafted the manuscript. NF supervised the preparation of the manuscript. IM participated in conducting the research and writing the article. All authors approved the final version.

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