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التمكين الرقمي واستخدام المنصات الإلكترونية العالمية وأثرها في العملية التعليمية

Digital empowerment and the use of electronic platform and its impact on learning and teaching

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الملخص:

انطلقت فكرة البحث من منطلق حاجة المعلمين للتطور المهني وخاصة في مجال استخدام التكنولوجيا والتي باتت من الضروري استخدامها في العديد من مجالات الحياة ومنها عملية التعليم والتعلم ومجارات المستجدات والتطورات التكنولوجية المتسارعة والاساليب الحديثة في التعليم ومواجهة التحديات التي تواجه العملية التعليمية عن بعد ، ومن ثم جاءت فكرة التوأمة بين المدارس لتعزيزها لهذه المبادرة . تقوم المبادرة على اساس التمكين الرقمي للمعلمين/ات واستخدام التكنولوجيا والمنصات الإلكترونية المرئية العالمية في العملية التعليمية من خلال تدريب مجموعة من معلمي/ات اللغة الانجليزية على العديد من المنصات الإلكترونية التعليمية العالمية والتي تستخدم للتواصل بين المعلمين وطلبتهم عن بعد او جاهيا داخل الصفوف وفي الحصص المدرسية من خلال التطبيق العملي لهذه المنصات من جهة ، ولتعزيز الشراكة والتعاون وتبادل الخبرات بين المدارس والتي تتيح الفرصة للقاءات افتراضية بين المعلمين عن بعد والتعارف بينهم وبين طلبتهم وتبادل الخبرات والدروس والانشطة والمسابقات والاختبارات بشكل مباشر من جهة اخرى . كما انها تساهم في التطور المهني للمعلم واكتسابه مهارات واساليب حديثة في التعليم ، ومن ثم دمج الطلبة ونقل الخبرات لهم من خلال تدريبهم على استخدام المنصات لتمكينهم من التواصل مع معلمهم وبالتالي انعكاس ذلك على تطوير وتحسين اداء المعلمين/ات ورفع مستوى التحصيل لدى الطلبة وتسهيل عملية التواصل بين الطلبة والمعلمين في العملية التعليمية في التعلم وجاهيا وعن بعد .

كلمات مفتاحية: التمكين الرقمي . المنصات الإلكترونية . التعليم الإلكتروني (عن بعد) .

Digital empowerment and the use of electronic platform and its impact on learning and teaching

Abstract:

The idea of the initiative was launched out of the teachers' need for professional development, especially in the field of using technology, which has become necessary to use it in many areas of life, including the teaching and learning process, keeping pace with the rapid technological developments and modern methods of education, and facing the challenges facing the educational process from a distance, and then the idea of twinning between schools came in support of this initiative.

The initiative is based on the digital empowerment of teachers and the use of technology and global visual electronic platforms in the educational process, by training a group of English language teachers on many global educational electronic platforms that are used to communicate between teachers and their students remotely or within classes and in school classes from Through the practical application of these platforms on the one hand, and to enhance partnership, cooperation and exchange of experiences between schools, which provides the opportunity for virtual meetings between remote teachers and acquaintance between them and their students and the exchange of experiences, lessons, activities, competitions and tests directly on the other hand. It also contributes to the professional development of the teacher and acquiring modern skills and methods in education and then integrating students and transferring experiences to them by training them .

Keywords. Distance learning . Electronic platforms. Professional development. Blended education.

1. Introduction

1.1. Background of the Initiative

Digital empowerment in education has seen significant growth, with advancements in digital technology transforming teaching and learning. The rise of educational technology has introduced various tools like learning management systems and language apps. Educators must recognize the importance of digital empowerment to enhance teaching methods and student achievements. Training English language instructors in utilizing technology can improve learning experiences. Collaboration among schools and educators can foster a sense of community and shared best practices. Twinning between schools allows for partnerships to exchange ideas and enhance teaching methodologies. By integrating technology effectively, providing digital skills training, using global electronic tools, promoting collaboration, and sharing success stories, education can progress sustainably alongside technological advancements. See references: (Gottschalk & Weise, 2023, pages 46-50)^[4], (Sanchez/ProFuturo, 2023)^[2], (Cattan, 2024)^[13], (Gottschalk & Weise, 2023, pages 6-10)^[4].

1.2. Importance of Digital Empowerment in Education

Digital empowerment in the realm of education plays a pivotal role in fostering comprehensive and fair learning environments for all students. The incorporation of digital tools can enrich the teaching and learning process, offer tailored learning experiences, and enhance accessibility for various student demographics. By effectively utilizing digital technologies, educational systems can embrace inclusivity by catering to the needs of every learner, irrespective of their backgrounds or capabilities.

In numerous OECD nations, digital technologies have been instrumental in advancing inclusion in education by providing adaptable teaching approaches, personalized learning experiences, and heightened motivation for students. The COVID-19 outbreak highlighted the significance of online learning as a means of bridging educational disparities and connecting with remote learners. Distance education has proven particularly beneficial for students residing in rural or secluded areas, enabling real-time virtual teaching sessions and virtual field trips to enrich their educational journeys.

Furthermore, the integration of technology into education can empower educators by honing their expertise and knowledge through continuous professional development opportunities. Countries like Italy and France have implemented training programs for teachers to equip them with the essential skills needed to effectively utilize digital tools in the classroom. By granting access to multimedia resources and online courses, teachers can stay abreast of the latest educational technology advancements and refine their teaching methodologies.

In essence, digital empowerment in education is indispensable for establishing a more inclusive and captivating learning atmosphere that caters to the diverse requirements of students. Through adept utilization of digital technologies, schools can foster collaboration among teachers, elevate student achievements, and pave the way for a sustainable future in education. See references: (Gottschalk & Weise, 2023, pages 11-15)^[4], (NIC, 2024)^[5], (Gottschalk & Weise, 2023, pages 46-50)^[4].

1.3. Purpose of the Report

The objective of this document is to delve into the realm of digital literacy in education, focusing on its effects on educators and learners. By investigating the relationship between digital literacy and teacher confidence, we aim to comprehend how knowledge of digital tools, motivation, technical proficiency, and competence influence educational practices. Additionally, we intend to identify the disparities in digital literacy between aspiring and experienced English teachers to gain insight into their beliefs in self-efficacy.

Upon reviewing existing literature, it becomes apparent that digital technologies have a significant impact on education, affecting aspects such as schools' technological capacity and transformation. The limitations of this study underscore the necessity for further research to enhance our comprehension of integrating ICT into education and its consequences. By viewing educational institutions as dynamic ecosystems with multiple stakeholders, we can better understand the intricacies surrounding ICT integration.

Furthermore, this document aims to illuminate the governance and regulation within the educational technology sector. With a fragmented global governance framework, there is a pressing need for increased collaboration among stakeholders to ensure that decisions regarding educational technology are pedagogically sound. Partnerships with the private sector play a critical role in providing digital resources and innovative solutions for a diverse range of students, ultimately fostering a more equitable educational system.

In summary, this document endeavors to offer valuable insights into the realm of digital literacy in education by examining its influence on teachers' self-efficacy beliefs and exploring governance structures within the educational technology sector. By addressing these crucial elements, we aim to contribute towards creating a more inclusive, fair, and effective educational environment through the utilization of digital technologies. See references: (Sanchez/ProFuturo, 2023)^[2], (Gottschalk & Weise, 2023, pages 46-50)^[4], (Timotheou et al., 2022)^[6], (Sarycoban, 2013, pages 1-5)^[12].

2. Understanding Digital Empowerment

2.1. Definition of Digital Empowerment

In the realm of education, the concept of digital empowerment entails leveraging digital technologies to their maximum potential. This approach emphasizes placing learners at the forefront of the educational process and involving them through personalized experiences. It includes imparting basic digital skills, providing essential competencies for lifelong learning, and fostering creativity using a variety of tools and platforms. Digital empowerment equips individuals with the skills necessary to become proficient users, learners, teachers, and more.

The theoretical framework surrounding digital empowerment traces its origins from traditional language teaching methods to the widespread use of computers in educational settings. The launch of the sputnik satellite in 1957 marked the commencement of the digital era, which revolutionized foreign language instruction and learning practices. The integration of new technologies facilitated the adoption of electronic platforms in educational environments.

Moreover, research inquiries have been developed to examine the link between digital empowerment and teacher self-efficacy beliefs. The connection between future English language teaching (ELT) educators' digital empowerment and their understanding, motivation, technical proficiency, and competency is scrutinized. Acquiring insights into these aspects is vital for enhancing teacher training approaches and effectively integrating technology into instructional methodologies.

Overall, digital empowerment in education empowers individuals to leverage technology for learning and teaching purposes. By embracing digital tools and platforms, instructors can design captivating learning experiences that meet diverse student needs while fostering equal access to education. See references: (Irwansyah & Hardiah, 2020)^[7], (Sarycoban, 2013, pages 1-5)^[12].

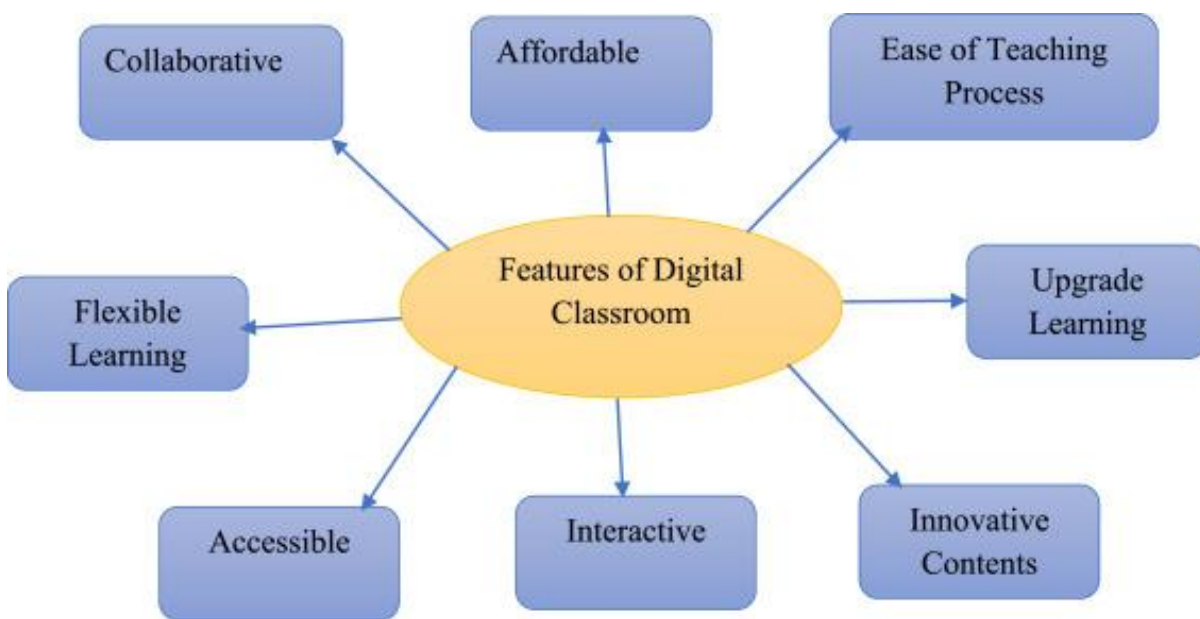


Figure 2: Features of Digital Classroom. (source: reference (Haleem et al., 2022)^[1])

2.2. Impact on Teachers and Students

Digital empowerment in education places teachers and students at the heart of innovation. Incorporating technology in the classroom can revolutionize teaching methods and enhance academic performance. Educators who are well-versed in digital tools can establish interactive learning environments that cater to individual student needs. Furthermore, technology enables personalized interventions tailored to specific requirements, ultimately enriching the learning journey for students.

For teachers, digital empowerment means possessing the necessary skills to effectively integrate electronic platforms into their teaching strategies. It is crucial for educators to engage in training programs that focus on understanding digital technologies, motivation, technical proficiency, utilization, and competency. By incorporating technology into their teaching approaches, teachers can develop dynamic lessons that accommodate diverse learning preferences and successfully engage students.

Additionally, digital empowerment directly benefits students by granting them access to quality education without geographical constraints. Through virtual reality, augmented reality, and adaptive learning

algorithms, students can immerse themselves in interactive educational settings that foster active participation and knowledge retention. The integration of blockchain technology further enhances the credibility and security of online certifications and credentials, ensuring that students receive recognition for their accomplishments.

In conclusion, the transformative impact of digital empowerment on teachers and students is profound within the realm of education. By empowering teachers with the necessary skills to effectively leverage technology, we enable them to create stimulating learning experiences for students. Ultimately, digital empowerment sets the stage for a more inclusive and accessible educational system that equips students for success in the digital era. See references: (Gottschalk & Weise, 2023, pages 31-35)^[4], (Bajaj, 2023)^[11], (Timotheou et al., 2022)^[6].

2.3. Benefits of Utilizing Electronic Platforms

Integrating electronic platforms into the educational sphere provides a plethora of advantages that enrich the learning journey for both educators and learners. By infusing technology into the academic realm, students can partake in a more lively and interactive learning process. The utilization of projectors, computers, and other state-of-the-art equipment in classrooms can transform studying into an enthralling and captivating experience for students. This heightened engagement can spark a greater interest in the subject matter while reducing distractions, thereby cultivating a more focused learning atmosphere.

Moreover, digital platforms offer avenues for students to engage beyond conventional verbal communication. Through the inclusion of tasks involving technological resources, oral presentations, and collaborative group work, student learning becomes more immersive and interactive. Furthermore, digital learning fosters creativity and instills a sense of achievement in students, encouraging ongoing learning through innovative approaches.

Additionally, leveraging digital technologies in education leads to enhanced teaching efficiency by providing superior planning tools, seamless access to resources, efficient assessment methods, and opportunities for skill development. Online libraries facilitate global interaction among students, educators, and researchers while promoting distance learning initiatives. Digital tools also aid in instructing students with special needs through assistive technologies like speech recognition software and Braille displays.

In essence, incorporating electronic platforms into education offers advantages including increased teaching productivity, expanded distance learning possibilities, improved student performance through personalized learning experiences, greater access to educational materials anytime and anywhere, and the cultivation of inclusive learning environments that encourage collaboration and curiosity among students. See references: (Haleem et al., 2022)^[1], (Timotheou et al., 2022)^[6].

S. No	Applications	Description	References
1.	Improve teaching productivity	Teaching productivity may be improved by using advanced technological aids, which facilitate better planning, easy and practical learning, quick	sub-ref-[58], sub-ref-[59], sub-ref-

S. No	Applications	Description	References
		assessment, better resources, new skills, etc.	[60], sub-ref-[61], sub-ref-[62]
2.	Develop Online libraries	Technological advancements have helped create and develop online libraries, which have removed the physical space requirement and facilitated interaction among students, teachers, and researchers from across the globe. Online forums have brought subject specialists to discuss specific topics and evaluate the curriculum, teaching pedagogy, and assessment methods.	sub-ref-[63], sub-ref-[64], sub-ref-[65], sub-ref-[66]
3.	Promote Distance learning	In reality, technological advancement has boosted distance learning education. It provides easy access to all learning resources and allows the facility to interact with the instructor conveniently. Teachers may quickly build and manage groups using learning tools and technology such as social learning platforms.	sub-ref-[67], sub-ref-[68], sub-ref-[69], sub-ref-[70], sub-ref-[71]
4.	Facilitate Teaching of students with exceptional needs	It is encouraging to see how much assistive technology is available to help students with physical or learning disabilities absorb concepts quickly and actively participate in their classes. Speech recognition, screen-reading tools, Braille displays, and text-to-speech solutions are among the revolutionary technologies for the visually impaired; for the hearing impaired, closed-captioning applications, sound amplifiers, and video conferencing technologies facilitate sign language and lip-reading.	sub-ref-[72], sub-ref-[73], sub-ref-[74], sub-ref-[75], sub-ref-[76]
5.	Create Virtual classroom	Digital technologies in education have given rise to various Learning management systems (LMS). These LSMs have promoted virtual classrooms where a teacher can interact with students in real-time, share his resources, deliver his lecture, assess students' learning, collect feedback, and reply to their queries.	sub-ref-[77], sub-ref-[78], sub-ref-[79], sub-ref-[80]
6.	Build knowledge and understanding skills	Technologies strive to build knowledge, understanding, and skills to ensure that students thrive individually and as a team. Teachers may encourage children's curiosity and inquisitiveness through exciting and instructive material, which has been linked to their academic performance.	sub-ref-[81], sub-ref-[82], sub-ref-[83], sub-ref-[84]
7.	Creating Inclusive learning environments	An inclusive learning environment provides an equal opportunity for each student with different ability levels to learn in the same place. Virtual classrooms, video, augmented reality, robots, and other technology tools make the class exciting and create inclusive learning environments that foster collaboration and curiosity while allowing teachers to collect data on student performance.	sub-ref-[85], sub-ref-[86], sub-ref-[87], sub-ref-[88], sub-ref-[89]
8.	Developing teamwork and communication skills	Teamwork and communication skills are two crucial attributes that help develop a successful professional. Digital technologies play an essential role in developing these skills.	sub-ref-[90], sub-ref-[91], sub-ref-[92], sub-ref-[93]
9.	Solving educational challenges	Students collaborate to solve ongoing educational challenges using online platforms. Hackathons have emerged as a successful event to find the solutions to many challenging problems. Students may express themselves and collaborate on activities by sharing their thoughts and ideas.	sub-ref-[94], sub-ref-[95], sub-ref-[96], sub-ref-[97]
10.	Enhanced access to educational resources	Access to educational resources anytime is now possible, seven days a week. Cloud storage, video recording of lectures and availability of notes in a soft copy made it easy for students to access the resources at their convenience. Even parents can access these resources and check the quality of lectures and notes.	sub-ref-[98], sub-ref-[99], sub-ref-[100], sub-ref-[101], sub-ref-[102]
11.	Addressing students completing the syllabus	Computer-assisted learning is the most direct way to support students by helping the teachers complete the syllabus. Students have different	sub-ref-[103], sub-ref-[104], sub-ref-

S. No	Applications	Description	References
		baseline learning levels in a classroom, and teachers are frequently driven to teach to the highest stratum, leaving many students behind. These technologies have helped such students in completing their syllabus.	[105], sub-ref-[106]
12.	Transformed the innovative way of learning	Digital technology has transformed the way pupils learn in the classroom, even though the education industry has evolved. Students are taught digital skills and encouraged to bring computers to class so that they may access a variety of materials quickly. Students are encouraged to explore information in new and exciting ways through educational applications and programmes. Teachers can use interactive whiteboards and classroom clickers to introduce and reinforce topic knowledge while changing their teaching approaches. Reporting and assignment management have changed substantially rather than generating real report cards to send home once a term. Instructors may now assign, collect, and grade work using specialised learning management systems, keeping students and parents informed about their progress.	sub-ref-[107], sub-ref-[108], sub-ref-[109], sub-ref-[110]
13.	Arithmetic classes	Digital tools help students listen to math classes and respond by typing, scribbling, or dictating their remarks. As the school year progresses and the years pass, digital technology will be employed to make math education through practice more accessible to all students, regardless of ability or learning environment. These technologies also give pupils the option of studying or demonstrating their math skills in various ways. Because the learning environment is more dynamic than it has ever been, today's students are very different from those for whom the educational system was created. As technology improves, classrooms are being remodelled and reimagined in numerous ways to meet the increasing expectations of modern digital learners.	sub-ref-[111], sub-ref-[112], sub-ref-[113], sub-ref-[114], sub-ref-[115]
14.	Convenient teaching and learning	COVID-19 has heightened the role of technology in the lives of billions of students around the world. Regardless, digital technology is the only way for the educational institution to thrive in this challenging day. Internet-based learning resources are now widely available. Furthermore, the AI system has significantly enhanced learning. Intelligence can identify a student's strengths and weaknesses on its own. They have a customised learning strategy to ensure that each student reaches their full potential. At times, they can even be more rewarding than classroom education. Coronavirus has shaken the entire planet, and people are progressively acclimating. As a result of the Pandemic, office staff are working from home. This situation affects everyone, and underprivileged people find it challenging to go about their daily lives. On the other hand, students can continue their education at home by employing digital technologies.	sub-ref-[116], sub-ref-[117], sub-ref-[118], sub-ref-[119]
15.	Reduce the requirement for a blackboard	The class with the most advanced technologies is now considered the best class. The use of technology in city schools has grown significantly in recent years. Blackboards have been replaced with PowerPoint presentations, online courses, and videos. Today, all schools incorporate technology into their curriculum in some form. Several schools have digitised their whole education system by recognising the function of digital classes in school. Because of the advancement of the internet, mobile phones, mobile apps, tablets, laptops, and other gadgets, more and more aspects of today's world are becoming digital. Digital education is replacing conventional education in classrooms in many schools and colleges.	sub-ref-[120], sub-ref-[121], sub-ref-[122], sub-ref-[123], sub-ref-[124]
16.	Making classroom instructions interesting	Classroom instruction has become more exciting and participatory due to digital education. Children are becoming increasingly aware of it. They not only listen to what the teacher says, but they also watch it on the	sub-ref-[125], sub-ref-[126], sub-ref-[127], sub-ref-

S. No	Applications	Description	References
		screen. It facilitates visual learning for youngsters. The instructional material in practical sessions in digital classrooms lets students pay greater attention to details through interactive online presentations. Students now have more options and control over their learning experiences because of technology in the classroom. Learning technologies have also provided academics with greater freedom in offering lectures or labs. Students can tune in to live-streamed lectures at a given time, whilst others can watch lecture recordings independently if they cannot attend a live session. Furthermore, real-time courses in online learning may provide students with better interests.	[128], sub-ref-[129]
17.	Built curriculum and support materials	Using modern technology, each teacher may build their curriculum and support materials, employing their most creative side to personalise learning. Although many people favour traditional teaching methods, the possibilities are endless when technology is integrated into the classroom. Education has become much more accessible, with a wide choice of learning techniques and degree options available. Teachers should think about why students want to use technology in the classroom rather than need it. It will surely assist educators in tracking student progress and developing innovative lesson strategies. Students who learn using technology can build skills that will help them succeed in the future.	sub-ref-[130], sub-ref-[131], sub-ref-[132], sub-ref-[133], sub-ref-[134]
18.	Improve performance	students' Educational technology improves student performance by systematically approaching instructional procedures and resources. It recognises individual needs by incorporating technology into classroom instruction and tracking student progress. Instructors must appropriately expose conditions the o select appropriate technology for the curriculum delivery and track outcomes to determine the success of the measures. Teachers can use the information offered by online activities to figure out which students suffered in particular classes and provide additional aid and support. Students can ask questions about the classroom and receive extra help with the challenging subject matter.	sub-ref-[135], sub-ref-[136], sub-ref-[137], sub-ref-[138], sub-ref-[139]
19.	Flexible education	As a result of technology improvements, education is becoming more flexible and accessible. Online degrees and mobile learning are becoming more popular, physical boundaries have been removed, and technologies can help their employees pursue their education. These are an excellent way for teachers to teach children how to keep organised and simplify their tasks right from the start. In addition to giving children access to information, modern technology has the potential to excite and empower them.	sub-ref-[140], sub-ref-[141], sub-ref-[142], sub-ref-[143], sub-ref-[144]
20.	Students gain self-learning abilities.	Students can build self-directed strong learning abilities by using learning tools and technology. They can figure out what they need to know, locate and use online resources, apply what they have learned to the problem, and even analyse comments. As a consequence, they have increased their production and efficiency. Digital learning tools and technology engage students and improve critical thinking skills, the foundation for developing analytic reasoning. Because they require children to observe the rules and conventions to play, interactive social skill games effectively teach youngsters discipline. Even children dissatisfied with other learning methods may continue to play games for a long time since playing itself is enjoyable. This aids in developing patience, which is another essential life skill. Children experience feelings of accomplishment due to gaining new knowledge and skills through digital learning tools, which gives them the confidence to pursue new interests.	sub-ref-[145], sub-ref-[146], sub-ref-[147], sub-ref-[148], sub-ref-[149]
21.	Expand knowledge	Students who use digital learning tools and technology are more involved and want to learn more. They may not even realise they are	sub-ref-[150], sub-ref-[151], sub-ref-

S. No	Applications	Description	References
		actively learning because they are learning through exciting approaches such as peer education, teamwork, problem-solving, reverse teaching, concept mapping, gamification, staging, role-playing, and storytelling. Because it is substantially more engaging and remembered than big textbooks or one-sided lectures, digital learning delivers a deeper context, a broader viewpoint, and more stimulating activities than traditional teaching strategies. As a result, students can better connect with the learning information. Furthermore, they frequently provide a more exciting and engaging approach to processing information.	[152], sub-ref- [153], sub-ref- [154], sub-ref-[155]
22.	Addresses learning gaps	By addressing learning gaps early and enhancing growth, each student's capacity to personalise learning sequences will make education more successful. In addition to educators, parents may use interactive activities to increase their child's interest in learning since gamification makes the process more enjoyable and engaging. Parents can use internet learning activities to augment their children's schoolwork. Digital learning tools and technology provide youngsters with fun and a plethora of benefits for their overall development. Digital learning allows students to access more knowledge and ensures that the content is customisable and tailored to their specific requirements. The ability to assist each student in studying at their speed and on their route is the most crucial advantage of digital learning.	sub-ref-[156], sub-ref-[157], sub-ref-[158], sub-ref-[159]
23.	Quickly gain information	Educators may quickly exchange information with other educators using digital learning tools and technologies in real-time. The growth of free and open content and tools has produced a sharing economic atmosphere. Classrooms worldwide may collaborate to share ideas and improve learning, experience, and communication skills by adopting digital devices and linked education. These also provide instructors with a fair playing field. Schools may save money while ensuring that all students have equitable access to educational materials. Problem-based learning is emphasised in digital learning solutions and constructive, collaborative learning techniques that direct students' attention to a real-world approach to learning. In elementary, secondary, and high schools, digital learning tools and technology support students in developing problem-solving skills, understanding emerging technologies, and self-motivation, which prepare them for future education and work.	sub-ref-[160], sub-ref-[161], sub-ref-[162], sub-ref-[163], sub-ref-[164], sub-ref-[165]
24.	E-books	Students can now discover information more quickly and correctly with advances in technology. Search engines and e-books are replacing traditional textbooks. On the other hand, students may begin to learn how to be responsible in the digital world by introducing technology into the classroom. The class becomes a microcosm of the larger digital environment in which students may practise communicating, searching, and interacting with other digital citizens. Technology has also increased communication and cooperation opportunities. Classrooms have traditionally been isolated, with cooperation confined to other students in the same classroom or building. Today's technology provides types of communication and collaboration previously unimaginable. Kids can share their knowledge with students in other schools around the country.	sub-ref-[166], sub-ref-[167], sub-ref-[168], sub-ref-[169], sub-ref-[170], sub-ref-[171]
25.	MOOC Platform	Students benefit from MOOCs to improve their credentials and talents. It enables millions of learners who cannot afford an education to enhance their employability by giving them access to various skill-based courses. Thanks to MOOCs, students and working professionals can study at their speed, from anywhere and at any time. Furthermore, some lecture courses offered through this platform result in a certificate that institutes and enterprises recognise as a step in the right direction. According to recent trends, online classes delivered through the MOOC platform have a sizable market. Students enrolled in professional studies and working executives are more motivated to improve their skill set to take	sub-ref-[172], sub-ref-[173], sub-ref-[174], sub-ref-[175], sub-ref-[176]

S. No	Applications	Description	References	
		advantage of growing job opportunities in specialised industries. MOOC-based personalised learning is becoming more popular.		
26.	Video-based instructional learning	Technologies based blended learning with entertainment and video-based instructional education is prevalent among students. This type of teaching-learning medium is highly participatory. This form of teaching style comprises not only audio-video but also instructional applications, podcasts, eBooks, and so on. Children are ecstatic to discover new concepts through these digital platforms. With the internet becoming more economical and accessible, there will be a more significant confluence of digital and conventional teaching-learning methods in the future. Online education provides freely available material for learning, teaching, and research. It enables students to engage with a wide range of study material publicly available on the internet, therefore establishing a self-learning environment.	sub-ref-[177], sub-ref-[178], sub-ref-[179], sub-ref-[180]	
27.	Increased opportunities	educational	The effective use of technology will undoubtedly increase educational opportunities. Students now have access to a wide range of online resources and journals linked to their study themes via their computers and portable devices, allowing them to obtain additional information for their schoolwork. Furthermore, digital platforms provide students with reliable and high-quality data from their PC, anywhere and anytime. Aside from information resources, technology in education allows students to contact academic professionals worldwide. Technology in education is the most significant revolution in teaching that will ever witness.	sub-ref-[181], sub-ref-[182], sub-ref-[183], sub-ref-[184]
28.	Access teaching material	up-to-date	Thanks to recent technological developments, students may now access the most up-to-date teaching. The traditional passive learning paradigm has been challenged, and due to technological advancements, educators can directly involve students in more effective learning methods.	sub-ref-[185], sub-ref-[186], sub-ref-[187]
29.	Breakdown barriers	all educational	Technology breaks down all educational barriers, allowing students and instructors to communicate in real-time and learn in ways that transcend time and location. Indeed, technology-based classrooms provide students with a unique environment to learn complicated subjects straightforwardly. A complete and rigorous learning experience would add a new dimension to their learning and assist them in achieving academic success. Technology integration starts in elementary school and progresses to high school and higher education.	sub-ref-[188], sub-ref-[189], sub-ref-[190]
30.	Offer environmental benefits		Using technology in the classroom offers environmental benefits as well. Institutions can save money on ink and paper by storing vital documents in a single digital place. There is lesser transportation of students and more secondary emissions, but there is no substitute for physical interactions between students and teachers.	sub-ref-[191], sub-ref-[192], sub-ref-[193]
31.	Dynamic learning		Teachers can use technology to create a more dynamic and exciting learning environment. Technology also provides a dynamic classroom environment by digitising textbooks and incorporating links and QR codes to study and assess course subjects. Technologically adept teachers may profit from the advent of new technologies. Software for specialised activities or the establishment of flipped classrooms, for example, is employed. In this scenario, students can watch pre-recorded lectures as homework and arrive at class ready to discuss topics and information. New digital instruments in classrooms necessitate management and training. Teachers must be productive in the classroom and online, using a variety of screens and technological platforms. The internet and other digital technologies, according to teachers, have greatly expanded the number of topics and abilities they	sub-ref-[194], sub-ref-[195], sub-ref-[196], sub-ref-[197]

S. No	Applications	Description	References
		must be knowledgeable about, and over half believe their workload has grown as a result.	
32.	Reduce teacher workload	New technologies are introduced by automating repetitive procedures and elements of the educational process. There are tools available for developing and grading exams. Most will post the findings to a database, where each student's performance may be easily verified. It takes time to communicate with students and their families. Teachers may use social media and texting to reach out to the entire community and engage in one-on-one conversations with each student and parent. These facilitate online spreadsheets, social network account updating, and contact information organisation.	sub-ref-[198], sub-ref-[199], sub-ref-[200], sub-ref-[201]
33.	Assessing students in real-time	Digital technology can revolutionise students' learning experiences in and out of the classroom. Technology allows us new ways of interacting, building knowledge, assessing students in real-time and preparing students for life in an increasingly digital world. Opportunities exist for instructors to reinvent instructional techniques, learn, and work more efficiently to improve wellness. Appropriate technology in an educational environment thus is evaluated for its ability to satisfy educational goals.	sub-ref-[202], sub-ref-[203], sub-ref-[204]
34.	Moving to Hybrid teaching & learning	Hybrid Teaching and learning involve the supplementary and complimentary use of Online and Offline teaching and learning. This is the future and an outcome of Education 4.0.	sub-ref-[205], sub-ref-[206], sub-ref-[207]

[Table 1](#): Digital technologies applications in education. (source: reference (Haleem et al., 2022)^[41])

3. Training English Language Teachers

3.1. Selection of Global Educational Electronic Platforms

When it comes to choosing international educational technology platforms for training English language instructors, it is essential to recognize the relationship between digital empowerment and teacher self-confidence. Studies have indicated a strong connection between these aspects within the realm of teaching foreign languages. Aspiring and experienced ELT educators show varying degrees of digital empowerment, with seasoned teachers typically possessing more advanced technical skills and experience.

Institutions should prioritize providing training programs that boost teachers' motivation, technical proficiency, and ability to effectively utilize technology. This can be accomplished through structured initiatives that encourage collaboration and hands-on experience with digital tools. Additionally, efforts should be made to evenly distribute digitally proficient instructors across schools to ensure fair access to high-quality teaching resources.

Countries such as Italy and France have successfully implemented teacher training schemes that focus on inclusive use of digital resources. These programs offer classes on virtual reality, artificial intelligence in education, and platforms like Moodle to enhance teachers' competencies and knowledge. By investing in continuous professional development opportunities that are adaptable and easily accessible, educators can update their teaching methods to align with the requirements of the digital era.

Moreover, international collaboration between educational institutions can provide valuable insights and resources for effective teaching strategies. Platforms like EdX provide courses from prestigious universities worldwide, enabling instructors to stay informed about the latest developments in educational technology. By harnessing the potential of these global educational technology platforms, English language teachers can elevate their teaching methodologies and equip students with quality education. See references: (Singh, 2023)^[3], (Vurilo, 2023)^[8], (Gottschalk & Weise, 2023, pages 31-35)^[4], (Sarycoban, 2013, pages 1-5)^[12], (Gottschalk & Weise, 2023, pages 46-50)^[4], (Schulte, 2021)^[10].

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> • Published in 2005 or later • Review and meta-analysis studies • Formal education K-12 • Peer-reviewed articles • Articles in English • Reports from professional/international bodies • Governmental reports • Book chapters 	<ul style="list-style-type: none"> • Ph.D. dissertations and theses • Conference poster papers • Conference papers without proceedings • Resources on higher education • Resources on pre-school education • Individual studies

Table 2: Inclusion and exclusion criteria for the selection of resources on the impact of digital technologies on education (source: reference (Timotheou et al., 2022)^[6])

3.2. Training Methodologies and Approaches

Teacher education programs play a crucial role in preparing educators to utilize technology effectively in teaching. The National Education Policy 2020 emphasizes the importance of continuous professional development through online resources like webinars and blogs. Despite challenges faced during the shift to online teaching, ongoing training is needed to empower teachers with digital tools for innovative strategies.

Integrating technology into teacher training programs enhances educators' teaching philosophies by focusing on technical and instructional skills. Collaboration among teachers through digital platforms promotes sharing best practices and innovative ideas, while online professional development opportunities support inclusive pedagogy for diverse student populations.

In conclusion, strategies for digital empowerment in education should prioritize equipping teachers with the necessary skills to incorporate digital tools into their teaching methods. Continuous professional development is essential for educators to adapt to changing technology and improve student learning outcomes through creative teaching approaches. See references: (Singh, 2023)^[3], (Media Education in English Language Arts, 2022)^[9], (Timotheou et al., 2022)^[6].

3.3. Integration of Technology in Teaching Practices

When it comes to incorporating technology into teaching methods, it is essential to recognize the impact of digital tools on promoting inclusivity and equality in education. As highlighted in information gathered from various sources, digital technologies can serve as powerful educational resources when used with inclusivity at the forefront. For instance, assistive technologies and online learning platforms have played a crucial role in supporting learners with disabilities and disadvantaged groups by granting them access to high-quality education.

Furthermore, feedback mechanisms and technology are key in enhancing the educational experience in virtual classrooms. Educators can utilize these tools to offer immediate feedback to students, allowing for more personalized and interactive instruction. By integrating interactive elements like video presentations and online training, classroom sessions become more engaging, enabling students to independently explore internet resources for learning.

Moreover, the adoption of global educational platforms such as EdX and Fuse Classroom can further enrich the integration of technology into teaching techniques. These platforms feature courses from leading institutions worldwide, equipping teachers with fresh methodologies and approaches to education. Collaborative initiatives between schools through twinning programs can also facilitate knowledge-sharing and professional growth among educators.

In conclusion, incorporating technology into teaching practices not only benefits teachers by broadening their teaching strategies but also empowers students by improving their learning outcomes. Through harnessing digital empowerment in education, we can establish a more inclusive and fair learning environment that prepares students for success in the digital era. See references: (Haleem et al., 2022)^[1], (Gottschalk & Weise, 2023, pages 16-20)^[4], (Gottschalk & Weise, 2023, pages 26-30)^[4].

4. Implementing Global Visual Electronic Platforms

4.1. Setting Up Communication Channels for Teachers

Establishing effective communication channels for educators is crucial in implementing digital empowerment in education. Selecting global educational electronic platforms is key to facilitating seamless communication and collaboration among teachers. These platforms allow educators to exchange ideas, share resources, and provide mutual support, promoting professional development and a sense of

community. Training workshops, webinars, and online courses are essential in empowering teachers with the necessary digital literacy skills to utilize communication tools effectively.

Integrating technology into teaching practices enhances communication abilities and expands professional networks. By incorporating digital tools like interactive whiteboards, online forums, and virtual classrooms, teachers can create immersive learning experiences and encourage collaboration among students. Overall, efficient communication channels contribute to fostering collaboration, sharing best practices, and promoting continuous professional development in education. Leveraging global educational platforms, implementing effective training methods, and integrating technology into teaching techniques are essential steps towards harnessing the potential of digital empowerment to improve student learning outcomes. See references: (Haleem et al., 2022)^[1], (Sanchez/ProFuturo, 2023)^[2], (Gottschalk & Weise, 2023, pages 31-35)^[4].

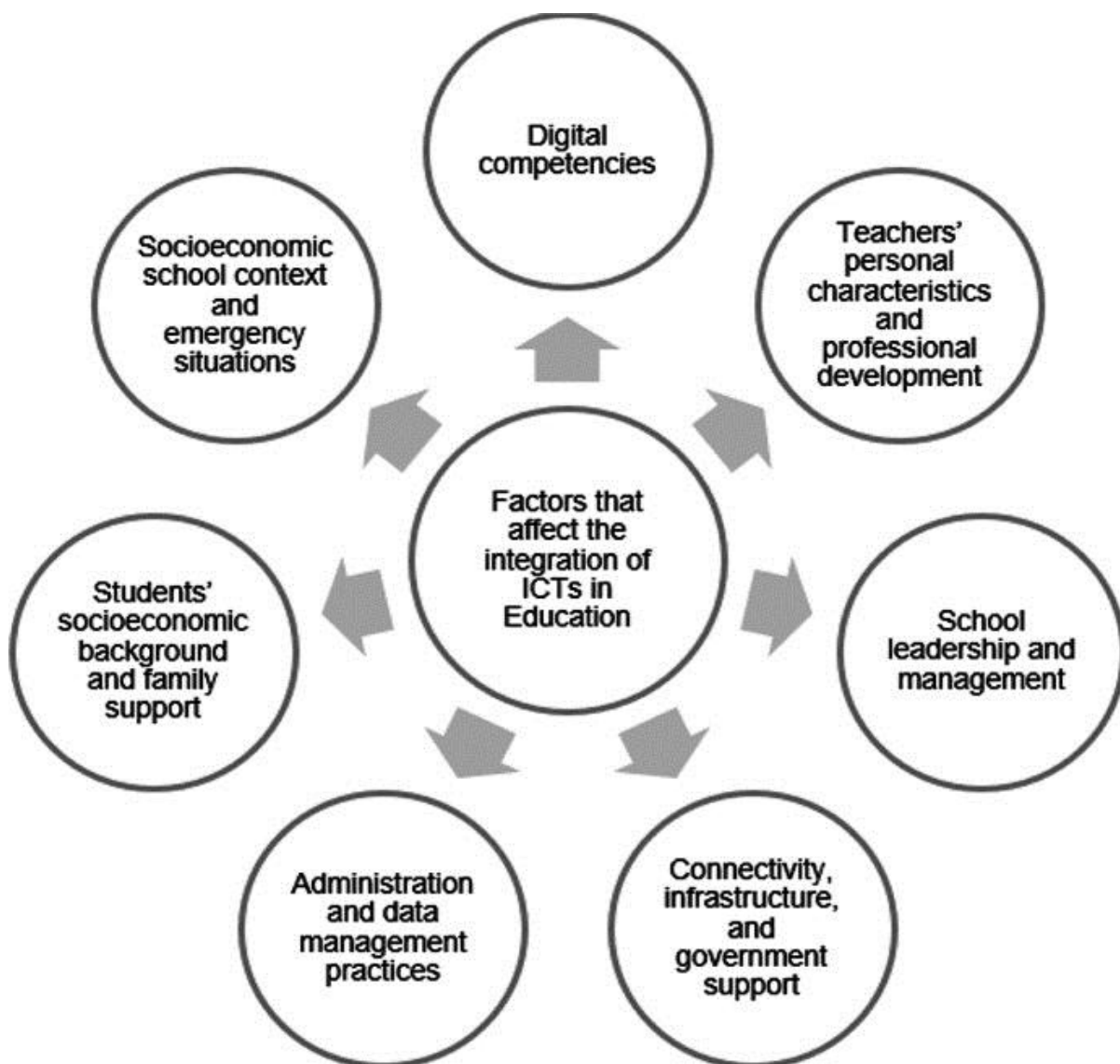


Figure 9: summarizes the factors affecting the digital technologies' impact on school stakeholders based on the findings from the literature review. (source: reference (Timotheou et al., 2022)^[6])

4.2. Collaboration Opportunities Between Schools

Interactions among schools play a pivotal role in advancing digital empowerment in education. Setting up effective communication channels for educators across various schools opens up valuable opportunities for sharing knowledge and collaborating. This can lead to the exchange of best practices, innovative teaching methods, and proficient use of digital tools. Schools can leverage each other's experiences and achievements, establishing a supportive network for continuous learning.

Furthermore, collaborative opportunities allow schools to collaborate on joint projects, initiatives, or research endeavors. By combining resources and expertise, schools can address common challenges more efficiently and achieve greater impact. This collaborative approach nurtures a sense of community among educators and students, fostering a culture of ongoing improvement and collective learning.

Monitoring and evaluation mechanisms are essential in ensuring the success of school collaboration efforts. By monitoring progress, evaluating outcomes, and measuring the impact of joint initiatives, schools can pinpoint areas for enhancement and make well-informed decisions for future collaborations. This data-driven approach contributes to enhancing the quality of collaborative activities and reinforcing the overall digital empowerment ecosystem in education.

In essence, collaborative opportunities among schools provide a dynamic platform for driving innovation, stimulating creativity, and broadening educational horizons. By working together towards shared objectives, schools can unlock new possibilities for leveraging digital technologies to enhance teaching practices, elevate learning outcomes, and empower both educators and students in the digital era. See references: (Gottschalk & Weise, 2023, pages 46-50)^[4], (Gottschalk & Weise, 2023, pages 31-35)^[4], (Gottschalk & Weise, 2023, pages 26-30)^[4].

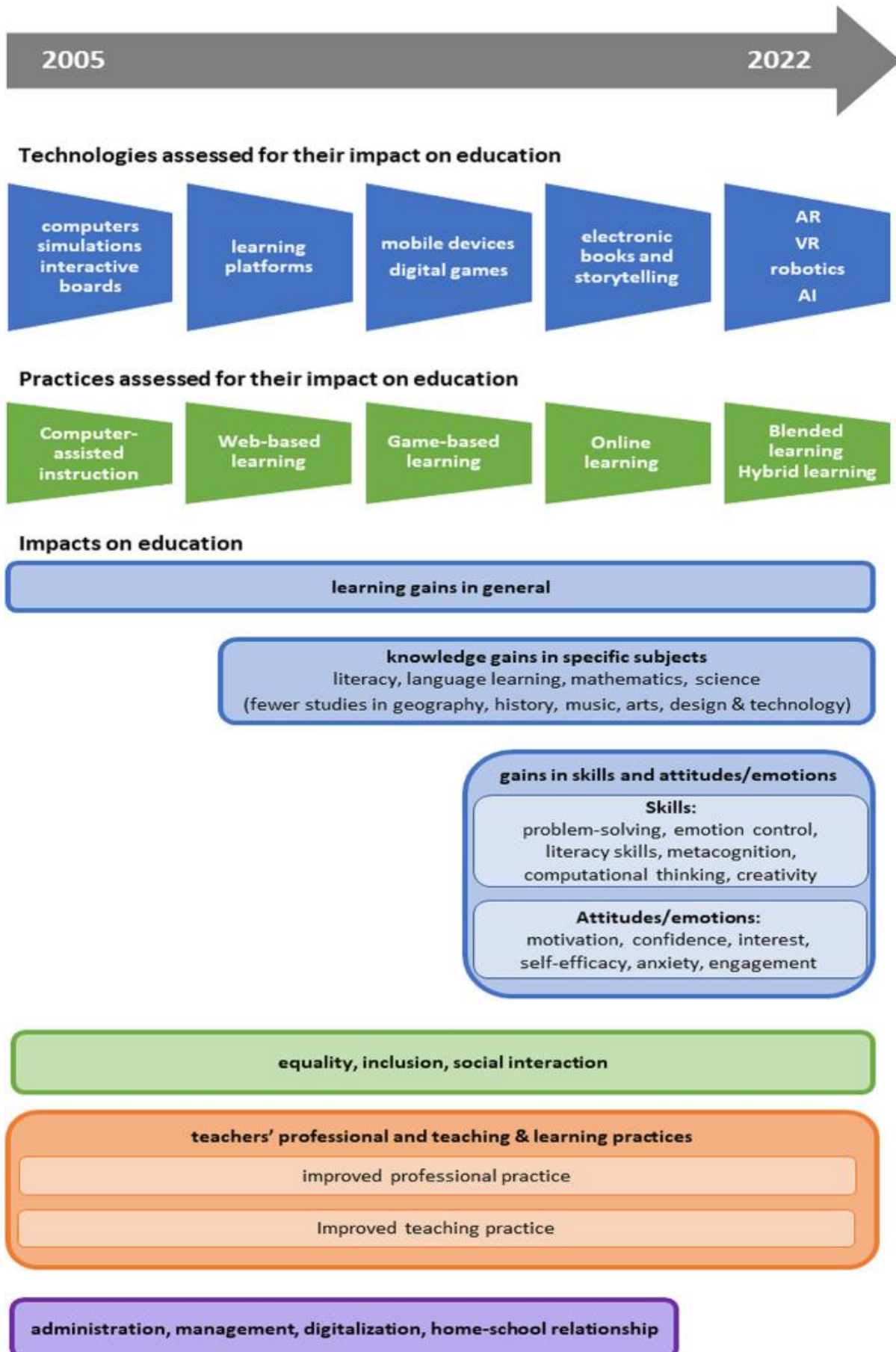


Figure 10: summarizes the trends identified in current research around the impact of digital technologies on schools' digital capacity and transformation as found in the present study. Starting as early as 2005, when computers, simulations, and interactive boards were the most commonly applied tools in school interventions (e.g. , Eng, 2005 ; Liao et al. , 2007 ; Moran et al. , 2008 ; Tamim et al. , 2011), moving towards the use of learning platforms (Jewitt et al. , 2011), then to the use of mobile devices and digital games (e.g. , Tamim et al. , 2015 ; Sung et al. , 2016 ; Talan et al. , 2020), as well as e-books (e.g. , Savva et al. , 2022), to the more recent advanced technologies, such as AR and VR applications (e.g. , Garzon & Acevedo, 2019 ; Garzon et al. , 2020 ; Kalemkus & Kalemkus, 2022), or robotics and AI (e.g. , Su & Yang, 2022 ; Su et al. , 2022). As this evolution shows, digital technologies are a concept in flux with different affordances and characteristics. Additionally, from an instructional perspective, there has been a growing interest in different modes and models of content delivery such as online, blended, and hybrid modes (e.g. , Cheok & Wong, 2015 ; Kazu & Yalcin, 2022 ; Ulum, 2022). This is an indication that the value of technologies to support teaching and learning as well as other school-related practices is increasingly recognized by the research and school community. The impact results from the literature review indicate that ICT integration on students' learning outcomes has effects that are small (Coban et al. , 2022 ; Eng, 2005 ; Higgins et al. , 2012 ; Schmid et al. , 2014 ; Tamim et al. , 2015 ; Zheng et al. , 2016) to moderate (Garzon & Acevedo, 2019 ; Garzon et al. , 2020 ; Liao et al. , 2007 ; Sung et al. , 2016 ; Talan et al. , 2020 ; Wen & Walters, 2022). That said, a number of recent studies have reported high effect sizes (e.g. , Kazu & Yalcin, 2022). (source: reference (Timotheou et al., 2022)^[6])

4.3. Monitoring and Evaluation Mechanisms

Assessing the effectiveness of any educational endeavor is greatly reliant on monitoring and evaluation mechanisms, particularly in the context of implementing digital empowerment in education. These crucial components aid in gauging the success of the program, pinpointing areas for enhancement, and ensuring that the desired outcomes are being met.

When it comes to digital empowerment, monitoring encompasses the tracking of essential metrics related to the utilization of online platforms, communication channels for educators, collaborative opportunities among schools, and overall engagement in the initiative. Consistent data collection on these elements offers valuable insights into the implementation process and enables timely adjustments to amplify the program's impact.

On the other hand, evaluation involves a more thorough assessment of the initiative's efficacy in achieving its objectives. This may involve conducting surveys or interviews with teachers and students to gather feedback on their experiences with digital tools. It could also entail evaluating learning results and comparing them against predetermined benchmarks to measure progress.

Moreover, instituting clear monitoring and evaluation mechanisms can help tackle obstacles like connectivity issues, lack of access to equipment or resources, and training gaps among educators. By methodically gathering data on these challenges, program coordinators can implement targeted strategies to overcome them and ensure a more comprehensive participation in digital empowerment endeavors.

Ultimately, robust monitoring and evaluation mechanisms are vital for guaranteeing the sustainability and scalability of digital empowerment initiatives in education. Through ongoing progress assessments, identification of improvement areas, and utilization of data-driven insights, stakeholders can effectively

harness technology's potential to enhance teaching methods and elevate learning outcomes for all students. See reference (Gottschalk & Weise, 2023, pages 51-55)^[4].



Figure 11: Technology in education (source: reference (Cattan, 2024)^[43])

5. Twinning Between Schools

5.1. Rationale for Twinning Schools

Twinning schools is an emerging concept in digital education that promotes collaboration and cross-cultural learning. By pairing schools from different backgrounds, students and educators can benefit from sharing ideas, practices, and experiences, fostering global awareness and respect for diversity. This approach allows students to interact with peers from diverse cultures, enhancing their sense of connection and appreciation. Collaborative projects between twinned schools also improve teamwork and communication skills. For teachers, twinning schools offer opportunities for professional growth through the exchange of best practices and teaching methods. This collaboration enhances teaching effectiveness and encourages ongoing development within the teaching community. Additionally, twinning schools promote digital literacy and technological proficiency among participants. By engaging in joint projects using digital tools, students and teachers can strengthen their digital skills while fostering creativity and innovation. Overall, twinning schools are an effective strategy for leveraging digital empowerment in education to create inclusive learning environments that prepare learners for success in a global society. See references: (Gottschalk & Weise, 2023, pages 6-10)^[4], (Gottschalk & Weise, 2023, pages 21-25)^[4].

5.2. Benefits for Teachers and Students

Empowering education digitally through the utilization of electronic platforms brings a myriad of advantages for teachers and students alike. For educators, digital empowerment opens doors to improved communication and collaboration opportunities with peers worldwide. It grants them access to a vast array of resources and training materials to enhance their teaching methods. By engaging in global visual electronic platforms, teachers can participate in professional development activities, exchange best practices, and acquire valuable insights into innovative teaching approaches.

Conversely, students reap significant benefits from digital empowerment in education. They have access to a plethora of educational resources, interactive learning materials, and online tools tailored to various learning styles. Digital platforms enable students to collaborate with peers from diverse backgrounds, engage in virtual classroom exercises, and partake in real-world learning adventures. Furthermore, digital empowerment promotes inclusivity by catering to the needs of students with special education requirements or those coming from disadvantaged backgrounds.

In essence, digital empowerment in education cultivates a more vibrant and stimulating learning environment for both teachers and students. It fosters creativity, critical thinking, and problem-solving skills while fostering a sense of community and belonging within the educational realm. By harnessing the potential of digital technologies, educators can craft meaningful learning experiences that improve student outcomes and equip them for success in an increasingly digitized world. See references: (Irwansyah & Hardiah, 2020)^[7], (Gottschalk & Weise, 2023, pages 6-10)^[4], (Gottschalk & Weise, 2023, pages 26-30)^[4].

5.3. Challenges and Solutions

Implementing digital empowerment in education faces obstacles due to educators and students lacking digital literacy skills. Teachers struggle to incorporate new technologies effectively, impacting student engagement. Connectivity issues worsen educational inequalities, especially for students from low-income families or remote areas. To address this, targeted interventions and support systems are necessary for equal access to educational opportunities.

Maintaining quality standards in online education is challenging. Regulatory frameworks are needed to ensure the credibility of online courses. Developing interactive e-learning materials, engaging learners through diverse communication channels, and providing high-quality learning experiences are crucial areas requiring attention.

Collaborative efforts involving policymakers, educators, technology specialists, and stakeholders are essential to overcome these challenges. Investing in training programs for teachers on digital tools and instructional strategies can enhance their ability to use technology effectively. Initiatives focused on bridging the digital divide through improved connectivity infrastructure and device accessibility can create a more inclusive learning environment.

By addressing these obstacles and implementing targeted solutions, the full potential of digital empowerment in education can be harnessed, offering a more engaging, accessible, and effective learning experience for students from diverse backgrounds. See references: (Haleem et al., 2022)^[1], (NIC, 2024)^[5], (Timotheou et al., 2022)^[6].

6. Case Studies and Success Stories

6.1. Experiences from Participating Schools

Participating schools involved in the digital empowerment in education initiative have uncovered valuable insights into the changes taking place within the teaching and learning process. Through detailed interviews with teachers and students, key themes emerged regarding access to ICT tools, awareness, motivation, initiative, competency, and obstacles. These themes offer a comprehensive view of the challenges and opportunities brought about by digital empowerment.

Educators and students have embraced digital collaboration as a community-focused method to create interactive and cooperative learning environments. By incorporating technology into their teaching methods, teachers have observed firsthand the positive impact on student engagement and active involvement. Students have taken on active roles in their learning journey, utilizing digital platforms to boost their creativity and adaptability to rapidly changing technologies.

Furthermore, the experiences shared by participating schools emphasize the importance of establishing a supportive ecosystem for the development of digital skills. By utilizing global educational online platforms, teachers have expanded their teaching approaches and encouraged collaboration among schools. This has not only improved communication channels among educators but also provided a platform for exchanging best practices and resources.

In summary, the case studies from participating schools underscore the significant influence of digital empowerment on teaching and learning outcomes. The initiative has paved the way for innovative educational approaches, highlighting the importance of continuous professional growth and the integration of technology in teaching practices. See reference (Irwansyah & Hardiah, 2020)^[7].

6.2. Impact on Teaching and Learning Outcomes

The implementation of digital empowerment in education has had a profound impact on teaching and learning outcomes. The incorporation of technology tools in the classroom has transformed the way teachers interact with students, offering a multitude of advantages. For example, digital platforms enable personalized learning experiences, allowing educators to effectively address individual student needs. Additionally, the utilization of electronic platforms has expanded collaboration opportunities between schools, fostering a more interconnected and globalized approach to education.

Furthermore, the adoption of international visual electronic platforms has facilitated communication channels for educators, encouraging the sharing of knowledge and exchange of best practices. This has resulted in an enhancement of teaching methodologies and approaches, ultimately improving the overall quality of education delivery. Moreover, monitoring and evaluation mechanisms have been put in place to monitor the progress and effectiveness of digital empowerment initiatives, ensuring continuous enhancement and sustainability.

Through school twinning initiatives, teachers have witnessed numerous benefits for both themselves and their students. By collaborating with schools from diverse regions or countries, educators have gained valuable insights and perspectives on innovative teaching methods. Students have also experienced

advantages from cultural exchanges and varied learning opportunities, broadening their awareness of global issues and viewpoints.

In conclusion, the influence of digital empowerment on teaching and learning outcomes has been significant. It has not only elevated the quality of education delivery but also cultivated a climate of collaboration, creativity, and continual improvement within the education field. See references: (Sanchez/ProFuturo, 2023)^[2], (Timotheou et al., 2022)^[6].

7. Future Directions and Sustainability

7.1. Scaling Up the Initiative

In order to expand the reach of digital empowerment in education, it is crucial to take into account the effects of digital technologies on the educational sector and the factors that impact schools' digital readiness and transformation. The review of relevant literature emphasized the necessity for schools to improve their digital preparedness in order to prevent disparities, inequities, and educational setbacks from widening. It also underscored how the integration of ICT in schools affects not only students' academic performance but also various stakeholders in the education system.

Future research endeavors should concentrate on specific elements like infrastructure development, governmental backing, school leadership, teachers' digital proficiencies, and pedagogical approaches to gain a deeper understanding of how digital technologies influence education. By delving into these components more thoroughly, a more comprehensive comprehension can be achieved to foster successful digital transformations in educational institutions.

Furthermore, the significance of technology in enhancing educational outcomes was deliberated during a panel discussion where it was proposed that governments should allocate resources towards innovative digital solutions for education. This emphasizes the critical role of creating an inclusive environment and actively engaging in the advancement and application of technological solutions to enhance educational outcomes through digital means.

In conclusion, expanding the initiative of digital empowerment in education necessitates a holistic grasp of how digital technologies impact schools and how different factors influence their digital preparedness and transformation. By concentrating on pivotal aspects such as infrastructure, leadership strategies, teacher competencies, and creative teaching methodologies, schools can effectively harness technology to improve teaching and learning outcomes. See references: (Cattan, 2024)^[13], (Timotheou et al., 2022)^[6].

8. Conclusion

8.1. Recap of Key Findings and Recommendations

The potential for digital empowerment in education is vast, but there are obstacles that must be overcome to ensure successful implementation. A study focusing on low- and middle-income countries brought attention to the importance of universal service funds in reducing costs for marginalized groups and enhancing internet accessibility. However, it also highlighted the underutilization of educational technology, with a significant number of software licenses remaining unused. To effectively integrate digital platforms into education, evidence-based decision-making is essential.

Moreover, the impact of digital technologies on schools extends beyond just student performance, influencing various aspects of school operations. Investments in ICT infrastructure and professional development are crucial for meaningful change. It is imperative that all stakeholders within the school community share a unified vision regarding the incorporation of ICTs in education.

Suggestions include conducting randomized controlled trials and obtaining third-party certification from education technology companies to verify the efficacy of digital tools. Furthermore, a comprehensive approach to evaluating the effects and transformations brought about by digital technologies in schools is vital. Educators should be supported in adopting technology to create engaging learning experiences that encourage student involvement.

In conclusion, expanding initiatives like the Intel Skills for Innovation program can empower educators to enhance learning outcomes and equip students for a technology-driven world. By utilizing digital activism practices and materials in the classroom, teachers can foster inquiry, empathy, and connections among students. See references: (Intel Skills for Innovation Initiative, 2024)^[14], (Sanchez/ProFuturo, 2023)^[2], (Timotheou et al., 2022)^[6].

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