



THE ROLE OF TEACHERS IN IMPLEMENTING THE DEVELOPMENT OF SCIENCE AND TECHNOLOGY IN THE DISRUPTION ERA

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ABSTRACT

In the era of disruption, the role of teachers is crucial in implementing the development of science and technology in education. Teachers not only act as teachers, but also as facilitators and mentors who guide students to understand, apply and develop science and technology creatively. This type of research is a literature study, where the data collected consists of primary and secondary data obtained through literature research. This research emphasises the important role of teachers in integrating technology into the learning process. Through a better understanding of teachers' readiness towards digital literacy, it can be expected that the adoption and implementation of technology in learning will increase, thus providing a more meaningful and quality learning experience for students.

Keywords: *teacher role, disruption, science and technology*

A. INTRODUCTION

Education serves as the essential learning process through which every individual experiences growth, understanding, and maturation, as well as the enhancement of critical thinking skills, which are vital for navigating the complexities of modern society. The landscape of education has undergone a significant transformation, becoming increasingly inclusive and affordable due to the remarkable advancements in information and communication technology, which has in turn fortified its status as a fundamental pillar in the socio-economic development of any nation. The emergence of online learning systems, diverse online learning platforms, and various educational applications has fundamentally altered the methodologies employed in the learning and teaching processes, thereby reshaping the educational experience (Mohd Yusoff & Hamzah, 2015). This evolution facilitates greater access to education for previously marginalized communities, promoting a heightened sense of educational equity that is essential for a more just society (Fauzi et al., 2023).

Contemporary students represent a generation that has been immersed in a digital milieu from an early age, which has resulted in their familiarity with an array of devices and technological platforms that are integral to their daily lives. This pervasive digital exposure necessitates that educators engage in a continuous process of professional development to enhance their competencies, not only in mastering the technological tools at their disposal but also in adopting innovative and creative pedagogical approaches. The significance of the teacher's role in the current educational landscape cannot be

overstated, particularly in light of the rapid advancements in scientific knowledge and technological capabilities that characterize our era (Irsyadillah et al., 2022; Wiliam et al., 2004). As educators, teachers are now charged with the dual responsibility of imparting knowledge to their students while simultaneously fostering an environment that encourages creativity and innovation in the management of learning experiences. The importance of teacher creativity is paramount, as it serves to cultivate an engaging and stimulating learning atmosphere that is conducive to student success and engagement.

This principle of teacher responsibility and capability is explicitly codified in Teacher and Lecturer Law Number 14 of 2005, Article 8, which stipulates that "Teachers are required to have academic qualifications, competencies, educator certification, physical and mental health, and the ability to realize national education goals." The strategic utilization of diverse learning media constitutes one effective approach for creating an enjoyable and productive learning environment for students, thereby enhancing their educational experience. In order to achieve this, educators must proactively seek opportunities to update their skills and engage in relevant training or professional development initiatives. It is imperative for teachers to familiarize themselves with active learning strategies, project-based learning methodologies, educational technologies, as well as the incorporation of new tools and resources that align with contemporary curricular demands.

Furthermore, teachers must possess a sufficient level of technological proficiency, have a clear understanding of how to seamlessly integrate technology into their teaching practices, and ensure that accessibility and inclusivity remain central tenets of their educational approach. The education system plays a crucial role in providing relevant training and support mechanisms that empower teachers to cultivate the necessary skills and knowledge base required for effective instruction (Wiliam et al., 2004). Educators can leverage technology to search for, create, and disseminate engaging learning materials, utilize online learning platforms, and embrace innovative teaching methodologies that significantly enhance the learning experience. Understanding the readiness of teachers for digital literacy is also instrumental in gaining insights into the various factors that influence the successful adoption and implementation of technology within educational settings.

In the realm of education, technology is purposefully developed to address specific challenges and to optimize the learning process in a manner that is responsive to evolving societal needs and conditions. The profound impact of technology in education becomes particularly evident when individuals are able to embrace and adapt to ongoing changes within their learning environments. Consequently, this research endeavor aims to explore the multifaceted role of teachers in the implementation of scientific and technological advancements during this era of disruption, as well as to delineate the strategic steps and methodologies that can be employed to enhance their competencies and effectiveness in the educational process. Ultimately, the goal is to empower educators to successfully navigate the myriad challenges they face, thereby equipping students to thrive in a dynamic and ever-evolving world.

B. RESEARCH METHOD

This scholarly investigation employs the rigorous library study methodology, which encompasses a comprehensive approach to data collection that is primarily derived from various library sources, followed by meticulous reading, precise note-taking, and systematic processing of pertinent research materials as articulated (Aryo et al., 2022; Astuti & Chandra, 2023). The library study method entails a thorough examination and evaluation of an array of data sources, which includes but is not limited to books, scholarly literature, detailed notes, and extensive reports that are intricately connected to the specific issue being researched (Bungin, 2017; Prakoso, 2021). In this context, it is worth mentioning that researchers are not required to engage in direct observational studies within a field setting; rather, they are tasked with the critical responsibility of identifying, retrieving, and analyzing relevant literature that pertains to their subject of inquiry, subsequently leading them to draw well-informed conclusions based on that analytical process.

It is important to highlight that the secondary data utilized in this research endeavor has been meticulously collected from a diverse range of resources, including authoritative books, reputable academic journals, peer-reviewed scientific articles, and various online mass media platforms that provide valuable information. This multifaceted approach ensures that the data gathered is not only comprehensive but also reflective of the current state of knowledge within the field. By relying on these secondary sources, the researchers can bolster their findings with established evidence and theoretical frameworks that have been previously scrutinized by other scholars. Ultimately, this methodical approach to data collection and analysis serves to enhance the validity and reliability of the research outcomes, thereby contributing to the broader academic discourse surrounding the topic at hand.

C. RESULTS AND DISCUSSION

The Role of Teachers in Facing the Development of Science and Technology

The swift and unparalleled advancement of technology in contemporary society has significantly escalated the expectations and requirements placed upon educators. In the context of the digital age, it is imperative for teachers to not only acquire a comprehensive understanding of technological tools but also effectively integrate and apply these technologies in the creation of innovative and imaginative learning experiences that engage students deeply (Perry, 2022; Suraworachet et al., 2023). The learners that educators currently engage with represent a generation that has been nurtured in an environment characterized by rapid technological evolution, thereby rendering them inherently acquainted with various forms of digital technology, as noted. This scenario underscores the necessity for teachers, who constitute a fundamental component within the educational landscape, to continuously enhance and expand their professional competencies in order to adeptly confront and navigate these emergent challenges.

Moreover, within this current digital framework, the responsibilities of teachers extend beyond the mere dissemination of information; rather, they are increasingly required to assume roles as facilitators and motivators who empower their students by providing them ample opportunities to explore and refine their individual learning capabilities while independently seeking and processing information. Consequently, it is essential for educators to harness the availability of technological resources to augment their own knowledge and skill sets in the formulation and delivery of creative and diverse pedagogical approaches, thus fostering a heightened interest in learning among their students. In the pursuit of elevating the overall quality of education within this digital epoch, educators frequently encounter a myriad of obstacles and challenges that complicate their instructional practices and hinder their effectiveness in the classroom environment(Kraft & Falken, 2020; Telsang M.T., 2011).

In the contemporary landscape of education, particularly within the context of the digital age that we currently inhabit, there exist numerous formidable challenges that educators are compelled to confront in their professional endeavors(Safila Anaya et al., 2021):

1. The continuous and relentless evolution of technology, along with the proliferation of information, exerts a profound influence on the swift and relentless progress of scientific disciplines, compelling educators to adapt their pedagogical strategies in order to remain relevant and effective amidst these rapid changes.
2. Concurrently, there is a noticeable and troubling trend regarding the deterioration of behavioral standards, ethical considerations, and social manners, which has become increasingly prevalent, thereby creating an environment that poses significant obstacles for educators striving to instill values and promote civility among their students.
3. Furthermore, the alarming escalation in criminal activities, coupled with a disturbing rise in acts of violence, as well as the growing population of unemployed individuals and those living in poverty, presents an additional layer of complexity that teachers must navigate as they seek to provide a safe and supportive learning atmosphere for their students amidst these societal challenges.

Situations of this nature, as one might anticipate, undeniably necessitate the presence of highly proficient educators who are adept at equipping their students with the essential competencies required to navigate and counteract the relentless and ever-evolving dynamics characteristic of the contemporary digital age. The concerted efforts undertaken by educators in their quest to address the technological currents that permeate the realm of education can be delineated as follows:

1. Educators possess the capability to thoroughly master an extensive body of knowledge, a plethora of information, and an array of technological tools, all of which are to be effectively integrated into the learning experiences designed for their students, thus ensuring that learners are well-prepared to thrive in an increasingly complex world.

2. Educators are expected to embody and demonstrate attitudes and behaviors that not only reflect professionalism but also serve as exemplary models for their students, thereby fostering a learning environment where positive characteristics and ethical standards can be emulated by those they instruct.
3. Educators are continually striving to deepen their commitment to and passion for their vocation as teachers, which in turn enables them to approach their daily responsibilities with a heightened sense of sincerity and dedication, ultimately benefiting their students through a more engaging and supportive educational experience.
4. Educators are obliged to acquire mastery over a diverse array of instructional methods, innovative models, and effective learning strategies that can be seamlessly incorporated into their pedagogical practices, ensuring that their teaching is both relevant and impactful in meeting the varied needs of their students.
5. Educators consistently uphold an open-minded disposition as they confront the rapid advancements in knowledge and the ongoing enhancement of their professional competencies, thereby positioning themselves as lifelong learners who are responsive to the changing landscape of education and technology.

Consequently, educators in the contemporary digital landscape are necessitated to elevate their academic qualifications by fundamentally reshaping the traditional methodologies that are still prevalent within the educational framework, while simultaneously enhancing and sustaining their professional attitudes and interpersonal behaviors in the presence of their students. Moreover, it is imperative for teachers to remain cognizant of the swift advancements in technology that are continuously reshaping the educational landscape. In this context, educators are encouraged to actively harness the beneficial aspects of educational technology while proactively anticipating and mitigating any detrimental effects that may arise from the evolution of digital tools and resources within their instructional practices. Should an educator lack a professional demeanor, there is a considerable risk that students will encounter significant challenges in their developmental journeys, as the pivotal role of teachers amidst the technological upheaval is to remain vigilant regarding the fast-paced technological innovations, all the while fostering positive character traits within their students.

The paradigm of learning has undergone a profound transformation, transitioning from the analog age characterized by traditional methods to a digital epoch defined by technological integration and innovation. Within this digital framework, the educational environment must be congruent with the incorporation of information and communication technologies, such as the internet and various online platforms, which facilitate autonomous learning experiences, thereby diminishing the reliance on singular locations and exclusive sources of knowledge, and encouraging students to become more self-sufficient in their educational pursuits. This period heralds a significant wave of transformation that fundamentally alters existing systems and structures, resulting in a need for adaptability and innovation. Consequently, those who persist in employing outdated techniques and frameworks are likely to lag behind in the increasingly

competitive educational landscape. In essence, disruptive technologies have ushered in a new era characterized by rapid technological progressions that are instrumental in the development of novel educational methodologies, necessitating that the realms of education and learning consistently adapt and evolve in tandem with these ever-changing advancements.

At the present moment, a plethora of resources and facilities are being made available, not only by external organizations and entities but also by the educational institutions themselves, in order to assist educators in enhancing and refining their technological competencies and skills. This proliferation of resources is indicative of the fact that we are currently navigating through an era characterized by significant technological disruption, which poses a formidable and daunting challenge to educators in Indonesia. Should there be no substantive adjustments or transformations instituted within the educational landscape, it is highly plausible that, in a span of thirty years, we may find ourselves relegated to a position of inferiority relative to other nations, particularly in the domain of educational excellence. This situation is exacerbated if educators continue to demonstrate a deficiency in both innovation and creativity in their pedagogical approaches and practices. Consequently, the educational experience provided within the confines of schools may devolve into a mere routine of repetitive delivery of factual and informative knowledge content, which ultimately fails to cultivate and develop the essential abilities of students to foster creativity, emotional intelligence, determination, and original works, alongside a heightened sense of social awareness. The consequences of such a stagnant educational methodology could be profoundly detrimental, not only to the individual students but also to the broader societal context in which they exist and operate. Therefore, it is imperative that a concerted effort be made to stimulate and inspire a more dynamic and engaging learning environment that transcends traditional methods and equips students with the skills necessary to thrive in a rapidly evolving world.

Development of Educators' Competence in the Era of Disruption

The contemporary epoch characterized by profound technological disruption has ushered in substantial transformations across an array of life domains, with the educational sector being one of the most prominently affected. Disruption, in its fundamental essence, can be articulated as a state wherein established norms and practices are fundamentally overturned or uprooted (Stevanus Kalis, 2022). In a more literal sense, the term disruption can be construed as a phenomenon that entails radical alterations or significant advancements that diverge from traditional modalities, culminating in substantial modifications to the prevailing societal order (Muhria et al., 2022; Winiyasri et al., 2020). This particular form of disruption is frequently instigated by the swift and relentless evolution of digital technologies, which have proliferated throughout various regions of the nation, with a marked concentration in urban environments where access to such technologies is more readily available.

Within the educational landscape, this technological disruption has engendered a myriad of applications that facilitate processes such as online registration and the availability of virtual bootcamps, which can be accessed at any time and from virtually any

location, thereby dismantling the conventional barriers associated with physical attendance (Nabung et al., 2022). This paradigm shift illustrates the profound ways in which technology has revolutionized our methodologies of learning and knowledge acquisition, rendering educational opportunities significantly more flexible and economically accessible to a broader demographic of individuals. The current disruption era can be construed as a pivotal chapter in the narrative of contemporary civilization, where information technology serves as the catalyst for the emergence of this disruptive phenomenon, propelling societal structures toward an increasingly digitized framework.

The prevailing social system is progressively transitioning towards a modern paradigm heavily reliant on internet-based technologies; in this context, every individual, collective group, or organizational entity is poised to gradually assimilate into this evolving landscape. The transformations we are witnessing in various life aspects are normative and reflective of the current state of disruption, with one of the principal catalysts for this upheaval being the advent of the 4.0 industrial revolution, which signifies a significant leap in industrial methodologies. Industry 4.0 represents a paradigm that amalgamates automation technologies with cutting-edge cyber technologies, thereby facilitating a trend characterized by the automation and data exchange prevalent in contemporary manufacturing processes (Khoirudin, 2023).

During this transformative era, industries are increasingly intersecting with the virtual realm, manifested through the interconnectedness between human operators, machinery, and vast data ecosystems, a phenomenon that is ubiquitous and is collectively referred to as the Internet of Things (IoT). As a consequence of these sweeping changes, it becomes imperative to formulate appropriate responses to this phenomenon, one of which is the strategic development of human resources (HR), particularly in relation to educators who play a crucial role in navigating and adapting to these transformative dynamics.

The advancement of educators can be associated with a multitude of factors, yet in the context of this discourse, the focus will be on the essential competencies that educators must possess in order to effectively navigate the tumultuous waters of the current era characterized by significant educational disruption. It is imperative to recognize that if educators, who serve as invaluable human resources within the educational landscape, do not actively pursue the enhancement of their skills and competencies, there exists a tangible risk that their roles and significance within the educational framework will, over time, diminish and potentially become obsolete in the face of evolving educational paradigms. In this regard, it is crucial to understand that the relevant and essential life and work skills, which have been acknowledged for an extended period, can be broadly categorized into three distinct yet interrelated domains: the first of which encompasses learning skills that include critical thinking, creativity, collaboration, and communication; the second pertains to literacy skills that involve information, media, and technology literacy; and the third category comprises life skills that encapsulate flexibility, leadership, productivity, initiative, and social skills, all of which are integral to the holistic development of an educator.

Essentially, in order to fulfill the role of an educator, a comprehensive set of competencies is not merely advantageous but is fundamentally required. According to the

National Education Standards, which delineate educator competencies, these competencies are classified into four primary domains: pedagogical, personal, social, and professional competencies. Each of these competencies plays a pivotal role in defining the educator's responsibilities and their capacity to execute professional duties effectively, as the vocation of an educator is far from simplistic; it encompasses not only intellectual obligations but also extends to moral and social responsibilities that educators must uphold. In the present climate, the educational system is undergoing a profound disruption, leading to widespread apprehension and uncertainty regarding the viability of traditional educational frameworks in adapting to the newly emerging, digital-based systems that are rapidly gaining prominence. Consequently, it is imperative for educators to actively cultivate and enhance the foundational competencies they already possess, thereby equipping themselves to meet the formidable challenges presented by this era of disruption.

The implementation of strategies aimed at the development of human resources, specifically in the context of educators, can be executed through a variety of methodologies, which may include but are not limited to training programs, educational initiatives, seminars, scholarly activities, collaborative work meetings, symposiums, and other professional development opportunities (Bombiak, 2020; Rodríguez-Sánchez et al., 2020). The array of development options available can be tailored to suit the specific needs and circumstances of the educators involved. As they confront the complexities of this disruptive era, the development of intellectual, interpersonal, and technology-oriented skills is undoubtedly essential for successfully navigating the substantial changes that are currently reshaping the educational landscape. The specific competencies that educators must focus on developing in order to effectively respond to the challenges posed by this disruptive era are as follows:

1. **Digital Literacy Competence.** In light of the extensive and pervasive digital transformation that has become an integral component of contemporary educational frameworks, it has become imperative for educators to possess a high degree of digital literacy skills, which are essential for both supporting the learning processes of their students and enhancing overall academic performance. Digital literacy can be defined as the proficiency in utilizing various technological tools and information effectively and efficiently. This multifaceted skill set encompasses the abilities to access diverse sources of information, manage that information appropriately, analyze and critically evaluate the content, and ultimately synthesize new knowledge based on the insights gained. Therefore, it is crucial for educators to be adept at leveraging the Internet of Things (IoT) within educational contexts to design and implement effective learning experiences, which may manifest through various innovative formats such as e-learning platforms, interactive e-modules, comprehensive e-books, and engaging educational videos that cater to diverse learning styles.
2. **Technology Commercialization Competence.** The development of this particular competence is of paramount importance, as it equips educators with the necessary skills to actively guide their students in becoming technologically savvy

entrepreneurs who can navigate the complexities of the modern business landscape. An entrepreneurial mindset, which emphasizes independence, innovation, and creativity, is essential for students to thrive in an increasingly competitive environment. Consequently, educators are required to possess a deep understanding of how to integrate and apply technology within the teaching of entrepreneurship, ensuring that students are well-prepared to engage and compete effectively within the global economy that characterizes the present era.

3. **Future Strategy Competence.** In addition to the aforementioned competencies, educators must also develop the ability to accurately forecast potential changes in the educational landscape and respond proactively with well-thought-out strategies. This particular competency is critical in ensuring that the graduates produced by educational institutions are not only relevant to the current societal and economic demands but also possess the skills necessary to compete successfully in the future job market that is continuously evolving.
4. **Counselor Competence.** Furthermore, it is essential for educators to cultivate counseling skills that enable them to address and support the psychological needs of their students, which may arise as a direct result of the rapid changes in society and the inherent complexities associated with modern learning environments. The development of this competency is vital for maintaining both the stability and the overall quality of the educational experience, as it allows educators to provide targeted support that can foster resilience and well-being among their students.
5. **Communication Competence.** The ability to communicate effectively, particularly in the realm of public speaking, has become increasingly significant in this age of disruption and rapid change. Strong communication skills empower educators to convey complex material, share critical information, and articulate innovative ideas with clarity and precision, whether in traditional face-to-face interactions or in virtual settings that have become more prevalent in recent times.
6. **Learning and Innovation Competencies.** It is imperative that educators develop robust competencies in learning and innovation, which encompass the capacity to engage in critical thinking, solve complex problems, communicate effectively, collaborate with others, and foster creativity and innovation among their students. These competencies are fundamental not only for enhancing the overall quality of the learning experience but also for ensuring that educators and their students are capable of adapting effectively to the myriad changes that characterize the contemporary educational landscape.
7. **Utilization of Technology in Learning.** The strategic utilization of technology within learning environments is essential for fostering an engaging and effective educational experience that meets the diverse needs of students in today's digital age.

Educators working within the realm of Elementary Schools, often referred to by the abbreviation SD, have increasingly integrated a diverse array of technological tools in their

pedagogical practices in order to significantly enhance and elevate the overall quality of the educational experience that they provide to their students:

1. The utilization of computers or laptops serves a multifaceted purpose, as these devices not only facilitate the processing of large amounts of data but also provide robust digital storage solutions, enabling students and educators alike to visualize educational materials in a manner that is both engaging and accessible.
2. The implementation of Liquid Crystal Display (LCD) technology plays a crucial role in the educational environment by allowing for the clear and effective display of learning information, thereby transforming abstract concepts into more concrete visual representations that students can easily comprehend and retain.
3. PowerPoint presentations have become an essential tool for educators, as they enable the effective communication of complex ideas through the strategic combination of text, images, and animations, thus fostering an interactive learning atmosphere that captures the attention of young learners and promotes deeper understanding.
4. Canva, a sophisticated online design program, is increasingly being utilized by educators to create visually engaging and aesthetically pleasing learning materials that not only enhance student engagement but also cater to diverse learning styles, thereby promoting inclusivity within the classroom.
5. Google Classroom has emerged as a pivotal platform in the landscape of modern education, providing educators with the necessary tools to effectively manage online classes, facilitate communication, and offer timely feedback to students, which is essential for fostering a supportive learning environment.
6. Interactive quiz platforms such as Kahoot! and Quizizz are revolutionizing the way educators approach assessment, as they make the learning process not only enjoyable but also competitive, thereby motivating students to engage actively with the material while reinforcing their knowledge and understanding.
7. Padlet functions as a digital whiteboard that encourages real-time collaboration among students and educators, allowing for the exchange of ideas and fostering a sense of community and teamwork, which is vital for developing essential social skills in young learners.
8. Video conferencing platforms like Zoom and Google Meet have become indispensable in the context of virtual education, facilitating not only the delivery of online classes but also the organization of extracurricular activities in a manner that ensures students remain connected and engaged with their peers and instructors, despite physical distance.

Fundamentally, it is imperative that competencies or skill sets are not only cultivated but also meticulously refined and adapted in accordance with the prevailing conditions and exigencies of contemporary society. One of the primary catalysts for the current epoch characterized by disruption and upheaval is the overwhelming barrage of advancements in technology and the rapid proliferation of information across various platforms. Consequently, the process of development is undertaken with the explicit aim of enhancing and broadening competencies so that they are not only more comprehensive

but also intricately aligned with the evolving needs and demands of the present era. The advancement of the competencies possessed by educators is an essential objective that must be realized, given that educators serve as the cornerstone for the emergence and sustenance of a progressive and enlightened civilization.

Naturally, the enhancement of educators' competencies is not an instantaneous endeavor; rather, it entails a prolonged and ongoing journey that necessitates patience and dedication. Hence, it is crucial that there be a consistent and coordinated effort among all stakeholders in the realm of education, which encompasses government entities, educational institutions, and professional organizations, to collectively work towards the development of the competencies or capabilities of educators. This collaborative approach is vital in transforming all challenges presented by the current educational landscape into viable opportunities, thereby enabling educators to significantly contribute to the advancement and improvement of education during this transformative era of disruption. Ultimately, the pursuit of excellence in educator competency development is not merely an option but a necessity for fostering an educational environment that is conducive to innovation and progress. In this context, it becomes increasingly essential to recognize that the evolution of educational practices must be a shared responsibility that involves active participation and engagement from all relevant parties in the education sector.

D. CONCLUSION

Educators are undeniably indispensable in the facilitation and implementation of advancements in science and technology (S&T) within the context of a rapidly evolving and often disruptive era. It is imperative that they acquire a profound mastery of both technology and innovative methodologies in the design of learning experiences, as they engage with students who are increasingly immersed in a world characterized by constant digital advancements and technological evolution. The traditional role of the educator has significantly transformed, evolving from merely presenting information to embodying the roles of facilitator and motivator, thereby empowering students to independently explore, analyze, and process information in a critical manner. In the context of this digital age, educators are confronted with multifaceted challenges, including the swift pace of technological advancements, a noticeable decline in moral standards, and an alarming rise in criminal activities, all of which can complicate the educational landscape.

To effectively navigate these complexities, it is essential for teachers to possess a high level of technological competency, to serve as exemplary role models for their students, to exhibit unwavering commitment to their profession, to be adept in a variety of pedagogical methods, and to maintain an openness to change and adaptation. The enhancement of teacher competencies during this disruptive era encompasses a diverse array of skills, including digital literacy, the commercialization of technology, strategic foresight for the future, counseling abilities, effective communication, and a strong emphasis on learning and innovation. The integration of technology into the educational process—through the utilization of computers, digital presentations, online platforms, and interactive tools—plays a crucial role in crafting learning experiences that are not only effective but also engaging and enjoyable for students. It is of utmost importance that the development of these competencies occurs in a consistent and sustainable manner, supported by all stakeholders within the educational field, to guarantee that teachers are

equipped to transform challenges into promising opportunities, thus making meaningful contributions to the evolution and enhancement of education during this era of disruption.

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