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From Blackboard to Digital Platform: The Fate of Classical Learning Theories

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A B S T R A C T

This study explores the relevance of classic learning theories—behaviorism, cognitivism, humanism, and cybernetics—within the digital education era. Using a qualitative literature review, the research investigates how these paradigms adapt to contemporary learning environments. Findings indicate that digitalization requires adapting student activities to enhance access, process, and interactivity. Specifically, behaviorism guides digital reinforcement, cognitivism facilitates active knowledge construction, humanism emphasizes student-centered self-actualization, and cybernetics focuses on information connectivity. The study concludes that classical theories are not obsolete; instead, they must be integrated into a holistic approach. By combining behavioral, cognitive, emotional, and technological dimensions, educators can optimize learning experiences for digital natives while effectively addressing modern challenges like information overload

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INTRODUCTION

In this digital era, every student must be prepared from an early age to adapt to rapid technological developments, considering that in the future, they will inevitably face an overwhelming influx of information. However, it is essential to recognize that the adaptive mechanisms of machines or artificial intelligence (AI) differ fundamentally from the way human students adapt, which involves complex cognitive, emotional, and social dimensions (Kirkwood & Price, 2006). Learning tasks are significantly influenced by uniquely human ways of approaching and engaging in the instructional process. Unlike the bits and bytes that form the basis of smart technology, human thinking and learning are shaped by the intricate interactions between the mind, brain, emotions, and body. A student's ability to think, learn, and perform future tasks depends on how effectively they manage and utilize these aspects, including the potential of the subconscious mind, imagination, creativity, and strong emotional connections built on mutual trust and care (Aydin & Balim, 2009).

One of the unique aspects of human learning compared to smart machines is emotional and social intelligence, which is entirely absent in artificial intelligence. Therefore, students should not be overly ambitious to work like machines; conversely, teachers must continuously encourage students to remain lifelong learners to stay relevant. Students today need to be more active than previous generations, entering a state known as a "hyper learner"—a condition where individuals must constantly learn to adapt and function in new ways for both the present and the future (Crossley, 1991).

The students currently in school belong to Generation Alpha (born 2010 onwards). Unlike previous generations, Gen Alpha are "true digital natives" who have been exposed to digital screens since infancy, even before entering formal education (Kuey.net, 2023). Recent research indicates that these students tend to have visual and kinesthetic learning styles, absorbing information more quickly through images, videos, and interactive simulations rather than lengthy texts (Ozford, 2024). Accustomed to an instant flow of information, they demand rapid feedback in the learning process. They also exhibit shorter attention spans, which necessitates dynamic and non-monotonous teaching methods (NIH, 2023). This generation expects personalized learning experiences that can be tailored to their individual pace and interests—a feature inherently offered by technology (EdTech Digest, 2023).

Despite these drastic changes in student characteristics, the reality of learning in many Indonesian schools still faces significant obstacles. Various studies (Indonesian Research Journal on Education, 2024; Fitriyani & Nugroho, 2022) highlight that many instructional practices remain conventional and teacher-centered. One-way lecture methods often fail to accommodate the learning styles of Gen Alpha, resulting in low student participation and motivation. Furthermore, teacher readiness and digital infrastructure gaps remain critical issues. Many educators have not fully acquired the competence to design pedagogical technology-based learning, often merely transferring textbook material onto projector screens (Mochamad Nashrullah et al., 2025).

Consequently, the potential of technology to improve learning quality has not been fully realized.

This paper argues that the current digital learning context does not necessarily eliminate classical learning paradigms. In fact, classical learning theories offer perspectives that complement the context of modern-day schooling.

METHODOLOGY

This study employs a literature review method. The data sources are derived from primary books and journal articles concerning learning theories and their relevance in the digital age. The objective is to provide a holistic and comprehensive overview of learning activities. Once the various literatures were identified and collected, the subsequent step involved screening these references to obtain high-quality library data, followed by their categorization.

After the literature was screened, the next stage involved analyzing and synthesizing information from various sources. During this phase, the research team compared findings from multiple sources to identify fundamental points and determine how they translate into the context of learning development for elementary school students. Since the literature review serves as the theoretical foundation, the researchers analyzed and concluded relevant results from the existing literature to construct a conceptual argumentation. The research team also addressed the weaknesses or limitations of each theory to facilitate a comprehensive understanding. The conclusion of this literature study summarizes the findings from the analyzed literature, providing an overview of how these theories relate to the research topic and offering subsequent recommendations.

RESULTS AND DISCUSSION

1. The Concept of Learning in Behaviorism

In the field of education, understanding the learning process is essential for identifying learning activities in the digital era. Behaviorist theory, developed by figures such as Edward Thorndike, B.F. Skinner, and John Watson, offers an interesting perspective on student behavior, which can be influenced and modified through reinforcement and conditioning. According to Thorndike (Klein, 2012: 7), learning reflects the development of stimulus–response associations. As a result of learning, a stimulus triggers an appropriate response. In line with Thorndike, Skinner stated that learning is a process of progressive behavioral adaptation. The effect of learning is progressivity—a change and tendency of behavior toward improvement (Ahmad, 2009; Jha & Sarma, 2008). He also argued that learning is essentially behavior. This means that when students learn, their behavioral responses improve; conversely, when students no longer learn, their behavioral responses decline.

A radical behaviorist, Watson, asserted that learning is a process of behavioral conditioning. Learning causes a person's behavior to change for the better (Ashford & LeCroy, 2010). According to Watson's conception, behavior resulting from learning must demonstrate observable change, rather than being based on speculation about cognitive and emotional processes that cannot be

monitored (Sigelman & Ridel, 2012). Watson, who was strongly rooted in the philosophical culture of positivism (Iwasiw, 2005), rejected the claims of Freudian psychodynamics that revolved merely around the question of "what humans think and feel." For Watson, the consciousness proclaimed by Sigmund Freud and his followers was entirely subjective and could not serve as a reference for empirical studies (Uno, 2008).

Similarly, Skinner rejected the significance of mentalistic and intrapsychic mechanisms in Freudian psychoanalytic views—such as consciousness, traits, feelings, goals, or other prerequisites—as driving factors of learning, because all of these stem from animism that hinders objective definition and empirical testing (Uno, 2008). Behaviorist theory, born as an antithesis to psychodynamic thought, gave rise to what Lefrancois (2012) described as "the war between mentalism and behaviorism." Furthermore, Edward Thorndike, as one of the pioneers of behaviorism, introduced the concept of the Law of Effect. According to Thorndike, behavior followed by pleasant consequences (reward) tends to be repeated, whereas behavior followed by unpleasant consequences (punishment) tends to be avoided. This principle forms the basis of the idea of "reinforcement" in learning.

From this description, behaviorists appear to speak of learning as "behavior." More specifically, overt behavior that can be seen and observed (observable) or psychological processes that can be quantified (Jerry, et al., 2001). For this reason, this view is called behaviorism (English – behavior: conduct, behave: to act). Thus, behaviorism is an approach in psychology based on the proposition that behavior can be explained scientifically. The theory assumes that learning is a process of behavioral change that can occur only if there is an external stimulus–response. According to this perspective, students occupy a passive peripheral position, while the teacher becomes the center of knowledge. In the teacher–student relationship, reinforcement becomes a central concept discussed in depth by Edward Thorndike and B.F. Skinner. Thorndike introduced the foundations of reinforcement through the Law of Effect, while Skinner developed a more detailed theory of operant behaviorism concerning various types of reinforcement and their applications in learning and behavior modification.

Understanding the relevance and contribution of the ideas of the figures mentioned above can serve as a reference in designing effective learning models in the context of education in the digital era, where technology can be used to apply various reinforcement techniques to enhance student motivation and engagement. By understanding these perspectives, educators can be wiser in selecting appropriate teaching strategies to support positive behavioral development and effective learning among elementary school students.

2. Learning According to Cognitive Theory

Behaviorism, which focuses on concrete behavior, has epistemological limitations. It is unable to explain complex learning processes, and in fact not all learning outcomes can be measured and observed. Thus, cognitive theory emerged. Cognitivism arose from dissatisfaction with behaviorism. It does not reject all behaviorist arguments, but rather sharpens the analysis of how humans process and store information, which is essential in learning. Prominent figures in the cognitive tradition include Jean Piaget, Ausubel, and Bruner. According to Jean Piaget, learning is a process of managing knowledge constructed by individuals as they continuously interact with their environment. In Piaget's perspective, learning means an active process in which individuals discover and construct their own knowledge from what they have found (Suparno, 2001).

Another cognitive figure, David Ausubel, developed cognitive potential through the process of "meaningful learning." Ausubel (Novak, 2010) wrote: "Meaningful learning is the process by which new information is related to relevant aspects of an individual's existing knowledge structure. However, the learner must choose to do this. The learner must actively seek ways to integrate new information with relevant information already present in his or her cognitive structure." Learning, in Ausubel's view, is a process of acquiring knowledge through reception, not merely through discovery. A learning process becomes meaningful only when new information is elaborated with relevant concepts already existing within the student's cognitive structure (Novak, 2010). Another cognitivist, Bruner, through his theory of free discovery learning, stated that learning is an active process that enables a person to discover new information beyond what is already known. The learning process becomes effective and creative when teachers provide students with opportunities to discover a rule (concept, theory, definition) through examples that illustrate the underlying principle. This grants students the freedom to acquire knowledge at each stage of their development. Bruner also encouraged the use of a "spiral approach" or tiered cycle in learning, meaning that students should learn gradually—from intuitive ways through the recognition of concrete material objects to analysis and abstract concepts; from simple and practical matters to complex ones; and from objects that are near to those that are distant (Nurhadi, 2020).

From the views of cognitivists, it is evident that their emphasis lies on the "learning process." Learning is an active process in which learners construct their own knowledge—an organic process of discovery rather than merely collecting facts. Learners must gain experience by forming hypotheses, testing hypotheses, manipulating objects, solving problems, seeking answers, describing, investigating, engaging in dialogue, reflecting, and constructing new understandings (Suparno, 1997).

3. Learning According to Humanistic Theory

Humanism was regarded by Abraham Maslow as the "third force" bridging Freudian psychoanalysis, behaviorism, and the cognitive approach to learning. Maslow, recognized as a pioneer of humanistic psychology, exerted a major influence on education, particularly in the development of learning theory. He is considered one of the most influential psychologists of the modern era. Early in his career, Maslow was connected with and inspired by Alfred Adler, Erich Fromm, Karen Horney, as well as Max Wertheimer, Kurt Koffka, and psychologists from the Freudian and Gestalt traditions. In 1935, Maslow worked at Columbia University with Edward L. Thorndike, a behaviorist who significantly influenced him and learning theory in general. In 1943, Maslow presented a paper at the Society for Research in Psychoanalysis and Psychosomatics in New York and published his work entitled A Theory of Human Motivation. Maslow believed that human behavior is the result of choice, not merely the effect of environmental forces or the unconscious. He held that human beings are essentially good, possess freedom of action, and have unlimited potential to learn, grow, and develop. Individuals bear responsibility for their own learning and self-development (Qadry, et al., 2021).

One of the most influential humanistic figures in educational theory and practice is Carl Rogers. He encouraged educators to apply learning approaches that are more humanistic, personal, and meaningful. According to Rogers, every individual is born with an innate drive to fully achieve their goals and to act in accordance with their unique personality. In his role as a psychotherapist, he developed person-centered therapy, which is nonjudgmental and not oriented toward predetermined goals. This approach provides space for students to define themselves and improve their condition and is considered ideal for application in education (Syafira, 2024).

Humanistic theory contributes to the development of positive character, attitudes, and conscience, transforms students' mindsets, nurtures creativity, and encourages individuals to continue learning. However, despite its strengths, humanistic theory has weaknesses that must be acknowledged, one of which is highlighted in the writings of Val J. Peter (2009). According to Peter, the humanism that emerged after the collapse of feudal regimes in the 1950s strongly opposed various traditional authorities in politics, religion, culture, and family. These institutions became targets of criticism for having long implemented authoritarian approaches toward children, which were believed to contribute to traditions of violence. Many humanistic writers argued that traditional approaches to educating children were misguided. Educators, they suggested, should act as therapists rather than moralists, applying counseling approaches instead of authoritarian ones. This counseling approach was later widely accepted in education, contributing to the emergence of a new generation more liberated from parental control.

In 1960, Carl Rogers published his book On Becoming a Person, which popularized the idea that to become a true human being, one must discover one's authentic self and free oneself from the distortions shaped by the social environment. He stated: "To find your true self, distance yourself from law,

prophets, the New Testament, including Freud and Jung, and trust your own experience. All else is false." According to Rogers, the primary sin in therapy, teaching, or family life is authority interference. This fosters an egocentric culture that teaches that no one has the right to declare another person sinful or to advise them on what they should do. Many of these statements appear valid and useful, yet the essence of this stance is an often-unrecognized anti-authoritarianism that can be highly destructive, as it may produce defiant children. Despite such criticisms, humanism is viewed as offering an extraordinary paradigm for moving from authoritarian educational concepts toward the more democratic conditions of today. This theory understands learning in terms of its "content," namely, to humanize human beings.

4. Learning According to Cybernetic Theory

Cybernetic learning theory is relatively the most recent and aligns with current developments in technology and information. From the cybernetic perspective, learning is viewed as a process of information processing. This approach shares similarities with cognitivism in emphasizing the learning process. However, cybernetic theory places greater emphasis on the information systems being processed, which have become one of the most influential learning approaches in today's digital era, as explained by Davidson and Goldberg (2009): "Learning as connectivity and interactivity ... Connectivity and interactivity enabled by digitally based social networks, at their best, produce learning groups in which members support and sustain one another, stimulate one another, and expand each other's inputs, contributions, and learning outcomes."

The four perspectives above describe learning activities from different approaches. The behaviorist perspective emphasizes learning outcomes, the cognitive perspective focuses on the learning process, the humanistic perspective highlights the content of learning, and the cybernetic perspective stresses the information systems being learned (Uno, 2008). It is worth noting that contemporary learning models that influence the world of education are shaped by the learning theories described above, particularly the theories of experts from the 1950s to the 1970s, such as Jean Piaget, Jerome Bruner, and Benjamin Bloom. They have inspired new ways of viewing the existence of students within the construction and constellation of learning through the emergence of the student-centered or active learning paradigm. Today, students are seen as sources of learning and active agents who must seek and discover knowledge independently, while teachers function primarily as facilitators (Payong, 2011).

5. The Relevance of Learning Theories

In today's digital era, the way students learn has changed. Democracy has brought equality, positioning students as active agents of learning. Information and communication technology enables students, as agents, to access and explore knowledge from various sources. When speaking about learning, it is not the teacher who should be the primary focus, but rather the students. From a philosophical perspective, learning therefore means "learning to be," not merely "learning about." "Learning about" refers to the process of acquiring theoretical knowledge about a topic or discipline—concepts, facts, or generalizations—

without necessarily engaging in practice. In contrast, "learning to be" emphasizes the development of competence and personal identity through practical experience. Students do not only study theory; they must apply their knowledge in practical situations.

In cognitive theory, cognition includes higher mental processes such as consciousness, intelligence, thinking, imagination, creativity, planning, reasoning, information gathering, problem-solving, concept formation, classification, relationships between concepts, symbol formation, and even fantasy and dreams (Marinda, 2020). Although we live in the digital age, these potentials must be empowered. Learning is not merely about technical or administrative skills. It is also about self-actualization. Therefore, from the four theories discussed above—behaviorism, cognitivism, humanism, and cybernetics—several points can be elaborated in student learning activities.

First, these theories need to be practiced simultaneously in the classroom, including at the elementary school level. Before beginning a lesson, teachers should provide stimulation to attract students' attention so that they can participate in learning activities. Students cannot learn without teachers—this is one of the key messages of behaviorism. After that, active and interactive learning processes (cognitivism) can be implemented in the classroom, while still paying attention to the formation of students' identity (humanism).

Second, Thorndike's Law of Effect can be applied to learning activities, especially when students are highly engaged with gadgets. Teachers can utilize this development by integrating concepts and practice through educational games. These games aim to provide rewards when students complete tasks or challenges. The use of gamification elements in learning, such as points or levels, can function as positive reinforcement, encouraging students to repeat positive behaviors (studying more diligently) because they experience pleasant outcomes. In line with B.F. Skinner's operant reinforcement theory, various learning platforms—whether offline or online—such as YouTube Edu, LMS, and AI tools, can be used by teachers to provide quick and personalized feedback (responses) to students. For example, when students complete an online quiz or assignment, they receive scores, comments, or digital rewards (or online punishment) as forms of reinforcement. Elementary school teachers can also monitor students' learning progress from the simplest to the most difficult material using learning applications based on stimulus–response principles, where more challenging topics or questions are given only after students successfully complete easier ones. The levels of students' ability development must be visible and documented by teachers, as this is a hallmark of the behavioristic approach. Behaviorism aims to evaluate observable learning behavior. The teacher's task is to monitor students' learning behavior in real time. This is the strength of behaviorism when combined with cybernetic learning theory in the digital era: teachers can monitor measurable and observable stages of change. Interaction between teachers and students does not always have to occur face-to-face; it can take place in different locations with the assistance of platforms such as Zoom Meeting, Google Meet, and similar tools. Digital learning helps students develop skills rapidly. Research by Muharam and Prasetyo (Cahya, et al., 2023) shows

that 85% of students feel comfortable learning through YouTube and understand the material being taught.

Second, in contrast to behaviorism, the cognitivist-constructivist concept of learning complements its limitations by emphasizing the quality of the learning process. Learning is viewed not only in terms of outcomes but also in terms of process, in which collaboration between teacher and students is absolutely necessary. Digital intervention in learning activities can enhance students' academic performance, affective development, and competencies. By focusing on process, cognitive learning theory holds strong relevance in the digital era, as learning processes can be carried out in diverse ways.

The use of interactive digital materials, such as video and audio, substantially increases student engagement and supports knowledge construction, which in turn contributes to improved learning outcomes (Bull, 2013). Research indicates that the use of digital tools in learning has positive implications for students' cognitive performance and enhances skills such as visual memory and logical reasoning. These findings suggest that technology can function as an effective tool for students' cognitive development (Giacomo, et al., 2017). George and Jacob (2020) summarize several advantages of integrating digital elements into learning activities, namely:

a. Improving the quality of student learning through visualization and practical examples;
b. Enhancing handwriting and language skills through word processing;
c. Fostering independent learning according to students' individual learning styles;
d. Facilitating teamwork and reducing isolated individual work;
e. Promoting consistency and accuracy in learning data and information;
f. Enabling the production of high-quality multimedia products;
g. Developing higher-order thinking skills and enabling the application of knowledge;
h. Assisting in analyzing challenging problems, understanding broader concepts, and generating new ideas and solutions.

Meanwhile, George and Jacob (2020) further argue that in order for students to learn effectively with the support of digital platforms, teachers in the digital era must innovate in their teaching by mastering basic technological competencies. These competencies are divided into five main aspects: productivity, research, communication, media, and presentation.

a. Productivity. In terms of productivity, teachers need to produce and manage learning documents, such as newsletters for parents, handouts for students, class lists, and also teach students how to prepare their own documents on a computer. Teachers should be able to analyze learning activities quantitatively and possess infographic skills.
b. Research. Teachers also need to conduct small-scale research frequently to improve the quality of guidance and instruction. They should be able to select appropriate research tools and databases, and apply effective search techniques to obtain useful and safe online resources for classroom use.

c. Communication. Teachers do not always need to communicate with students face-to-face; they can utilize various digital tools such as WhatsApp, email, Zoom, Google Meet, and others. If possible, schools can facilitate a simple school website to upload student projects and podcasts.
d. Media. In the digital era, teachers should at least have the ability to record and edit images, audio, and video, making learning more engaging and enjoyable for students.
e. Presentation. One of the skills most appreciated by students is when teachers are able to create effective and engaging digital presentations.

6. Challenges of Learning in the Digital Era

The foundational theories described above were formulated and practiced before the emergence of digital technology in education. Although all were appropriate in their time, there are important lessons for today's students—namely, that they should not learn beyond their personal capacities. Learning always begins with interest and enjoyment, from simple and practical activities, and only gradually progresses toward more complex themes or competencies. The greatest challenge of the digital age is the overwhelming flow of diverse information, which causes elementary school students to face various difficulties in processing information:

a. Cognitive Load among Elementary Students. The phenomenon of "info-besity," or information overload, is frequently experienced by today's schoolchildren and can result in excessive cognitive load. This condition disrupts their ability to process and store information effectively (Haroutunian-Gordon, 2009). Research indicates that excessive information negatively affects students' concentration, particularly in online learning environments filled with distractions (Hikmah et al., 2022). The inability to filter relevant information leads to difficulties in understanding instructional material, thereby making learning less optimal.
b. Declining Attention and Concentration. The diversity of activities and the abundance of information interfere with children's attention and concentration (Haroutunian-Gordon, 2009). To address this challenge, strategies such as mono-tasking and mindfulness practices can be applied. These techniques have been proven effective in helping students focus more on their learning tasks, reduce distractions, and improve learning outcomes.
c. Information Literacy. The ability to select and organize information is an essential skill for navigating the complex digital landscape. Unfortunately, many students struggle to develop information literacy skills (Borawska-Kalbarczyk, 2018). By equipping students with literacy skills, they can better manage their cognitive resources, which in turn can enhance learning outcomes (Weinstein et al., 2015).
d. Student Development. Whatever learning methods and theories are applied, when implemented in elementary schools, the primary principle is to understand students' development holistically—covering physical, psycho-emotional, spiritual, social, and intellectual dimensions.

CONCLUSIONS AND RECOMMENDATIONS

The rapid development of the digital era does not render classical learning theories obsolete; rather, it recontextualizes and revitalizes them. Behaviorism, cognitivism, humanism, and cybernetics continue to offer a strong conceptual foundation for understanding contemporary learning dynamics. Each theory contributes a distinct yet complementary lens. Behaviorism emphasizes reinforcement and habituation, which in today's context can be integrated with digital tools such as gamification systems, adaptive quizzes, and instant feedback platforms to strengthen students' motivation and observable learning behaviors. Cognitivism underscores the importance of mental processes—thinking, reasoning, remembering, and problem-solving—while digital technologies expand opportunities for interactive, multimodal, and exploratory learning experiences that enrich cognitive development.

Humanism reminds educators that learning is not merely the transfer of knowledge but the cultivation of the whole person. In a digital environment that is often fast-paced and impersonal, the humanistic perspective becomes increasingly crucial. Students must be recognized as unique individuals with emotional, social, spiritual, and intellectual dimensions. Learning should therefore foster self-actualization, meaning-making, and personal growth. Meanwhile, cybernetic theory highlights the dynamic and systemic nature of learning in an interconnected world. Through digital platforms, teachers are now able to monitor student progress in real time, analyze learning data, and adjust instructional strategies responsively.

Democratization in education has strengthened the position of students as active agents rather than passive recipients. The paradigm has shifted from "learning about" to "learning to be." This shift demands that learning move beyond theoretical accumulation toward authentic engagement, competence development, and identity formation. However, this transformation is accompanied by serious challenges: information overload, declining attention spans, weak information literacy, and the risk of superficial understanding. Without proper guidance, digital abundance can undermine rather than enhance meaningful learning.

For this reason, several recommendations are proposed:

a. Integrative Pedagogical Design. Schools and teachers should not rely exclusively on one learning theory but integrate behaviorist reinforcement, cognitive process-orientation, humanistic personal development, and cybernetic system-monitoring into a coherent instructional design.
b. Strengthening Digital Pedagogical Competence. Teachers need continuous professional development in digital literacy, data analysis, media production, and interactive presentation skills. Technological mastery must be accompanied by pedagogical wisdom to ensure that technology serves learning goals rather than distracts from them.
c. Balanced Use of Technology. Digital tools should be used purposefully and proportionally. Structured activities, clear learning objectives, and

guided reflection are necessary to prevent cognitive overload and fragmented attention.

d. Development of Information Literacy. Schools should systematically train students to evaluate sources, filter relevant information, synthesize knowledge, and think critically. Information literacy must become an integral component of the curriculum.
e. Holistic Student Development. Educational practice must remain grounded in an understanding of children's developmental stages—physically, emotionally, socially, spiritually, and intellectually. Technology should support, not replace, authentic human interaction and character formation.
f. Collaborative Learning Culture. Digital platforms should be utilized to promote collaboration rather than isolation. Students should be encouraged to work in teams, engage in dialogue, and co-construct knowledge.

The digital era presents both unprecedented opportunities and complex challenges. The future of education depends not merely on technological advancement, but on the ability of educators to synthesize enduring learning theories with innovative digital practices. When guided by pedagogical reflection and ethical responsibility, digital learning can become a powerful medium for forming competent, critical, and humane individuals.

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