e-ISSN 2795-3272
p-ISSN 2795-3264

10.5281/zenodo.10033410 Vol. 06 Issue 10 Oct - 2023 Manuscript ID: #01063

The trend of using smart teaching devices in education in Vietnam

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ABSTRACT

This study examines the growing integration of intelligent educational tools within the educational framework of Vietnam, underscoring the nation's swift shift towards a technology-centered learning environment. With 72.1 million internet users in Vietnam, marked by a 98.1% adoption rate of smartphones, 58.8% usage of laptops, and 35.5% ownership of tablets, these sophisticated devices have assumed a central role in the field of education. Notably, there exist governmental initiatives aimed at reinforcing the legal infrastructure, serving as a testament to Vietnam's dedication to advancing education through technological means. Smart educational devices have brought about a transformation in teaching techniques, rendering lessons more captivating, efficient, and accessible. The authors conducted a survey among a randomly selected group of 255 participants, revealing that the entire cohort utilizes smart devices for educational or work-related purposes. Nonetheless, certain students tend to employ smartphones for entertainment, which has raised inquiries regarding their scholastic impact. The paper explores the role of laptops, accentuating their revolutionary contribution to education and the necessity for further investigation to gain deeper insights into their effects. Furthermore, it investigates the obstacles encountered, encompassing technology-related distractions in educational contexts and disparities in technology access. Ultimately, this research underscores the significance of addressing these impediments to fully exploit the potential of intelligent educational devices in Vietnam's educational landscape, with the added benefit of drawing comparisons with global trends to glean valuable insights for further enhancing the educational domain.

KEYWORDS

Smart teaching devices, education, Vietnam.

1. Introduction

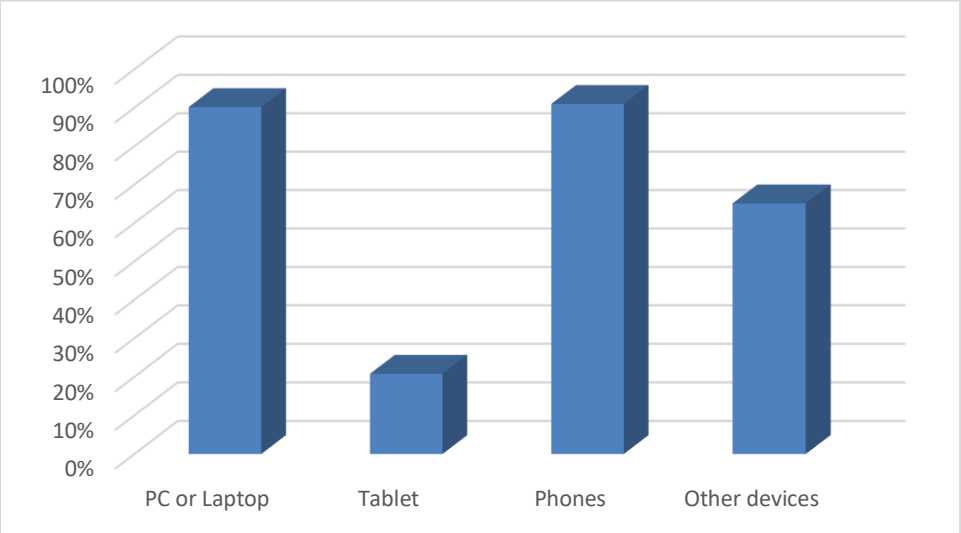
In the rapidly evolving landscape of education, the integration of technology has transformed traditional classrooms into dynamic and interactive learning environments. The concept of smart teaching devices has emerged as a catalyst for this transformation, revolutionizing the way knowledge is shared and acquired. This paper delves into the realm of smart teaching devices, their significance in education, and their adoption in the context of Vietnam. These classrooms in the 21st century are equipped with an array of components that collaborate harmoniously to provide an engaging and interactive learning experience. These technologies not only enhance teaching methodologies but also foster the development of students' skills, elevate their academic achievements, and encourage active participation in the learning process. Elements such as interactive boards, audio/video systems, management tools, and mobile computing devices synergize to create an environment conducive to smart teaching. Furthermore, innovations in pedagogy, encompassing content delivery, student engagement, and assessment, also play an integral role in the evolution of smart classrooms. The importance of technology in education cannot be overstated. Technology has emerged as a cornerstone of economic growth, and economies that lag behind in technological advancements risk stagnation. The impact of technology is pervasive, enhancing efficiency, reducing time constraints, and simplifying tasks across various domains. In this context, the field of education stands as a testament to the transformative power of technology.

2. Classification of smart teaching devices and its application

Smart teaching devices encompass a wide array of technological tools that have significantly transformed the educational landscape. The evolution of these devices can be traced through the years, from the introduction of the chalkboard in classrooms in 1890 to the gradual incorporation of technologies such as film strips, overhead projectors, desktop computers, interactive whiteboards, smartphones, and tablets. This technological shift has revolutionized teaching methods, transitioning from the traditional "blackboard and chalk" mode to the modern "computer and projection" mode. Notably, the integration of multimedia and interactive technology in schools has greatly enhanced both student learning performance (Phoong et a, 2019) as the lessons become more interesting and attention-getting (Jacqueline K. Eastman, 2009). Smart devices together with the Internet eased the effort and reduced time to get to information resources (Moreira, Ferreira, Santos, & Durao, 2017; Yeap, Ramayah, & Soto-Acosta, 2016).

The authors conducted a survey which involved 255 randomly selected participants, with 90% of them falling within the age range of 18 to 40, demonstrating the widespread use of technology in education and learning in Vietnam. This trend is particularly prominent in major urban areas. The survey posed the question, "Do you use smart devices/technology during your learning or work processes?" and remarkably, 100% of the participants responded affirmatively. These participants represented various professional backgrounds, with approximately 35% currently engaged in either work or study within the field of education. They were further queried about the specific devices they employed for their learning or work-related tasks. The survey results revealed that a substantial 91% of respondents used mobile phones for these purposes, followed closely by laptop or desktop computers at 90.2%. Additionally, accessories such as headphones, microphones, and speakers were utilized by 64.7% of participants, while tablets were employed by 20.8% of the respondents.

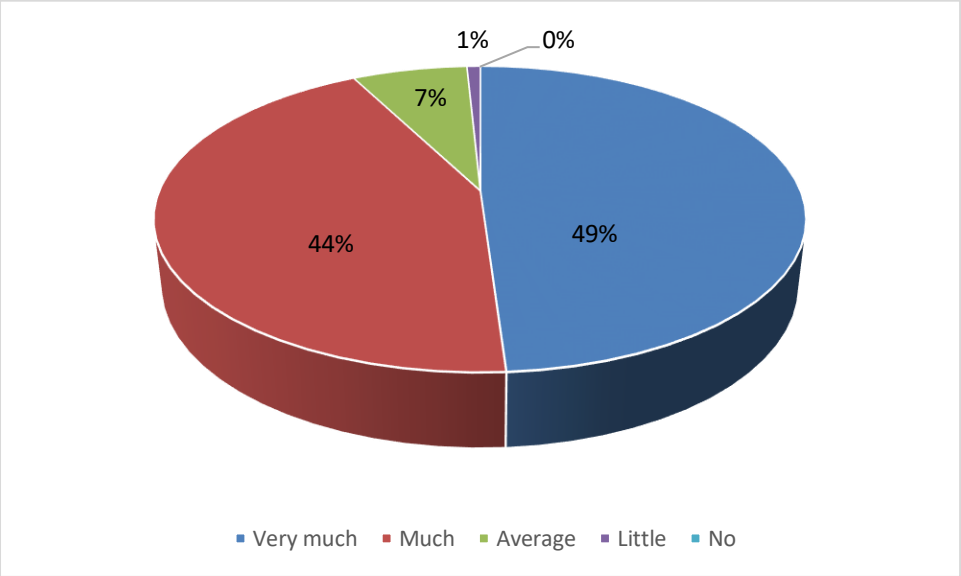
Figure 1. Survey on learning devices of Vietnamese



Source: Result of researchers' survey

Mobile phones have evolved into indispensable tools in the lives of young people today, leading educators to explore their potential for enhancing students' learning experiences, thus giving rise to the phenomenon known as mobile learning. This trend, referred to as "mLearning", has garnered considerable attention worldwide. Notably, a study conducted by John-Harmen Valk, Ahmed T. Rashid, and Laurent Elder in 2010 examined the impact of mobile phones in Asian countries, including the Philippines, Mongolia, Thailand, India, and Bangladesh. The analysis of these projects highlights the significant impact of mobile phones on education in the developing world, primarily through increased access to educational resources. In the context of enhanced access, feedback from participants in the Philippines and Mongolia projects underscores the flexibility of scheduling that mobile learning (mLearning) provides. Additionally, participants in a teacher training program in Bangladesh emphasized the advantages of staying with their families and schools during a two-week training period, made possible by mobile-based training. Importantly, these projects in the Philippines, Bangladesh, and Thailand demonstrate that mobile devices can effectively remove barriers to education while achieving educational outcomes that are, at the very least, comparable to traditional methods. In 2017, Heflin, Shewmaker, and Nguyen conducted a study at Abilene Christian University, USA, to delve into the impact of mobile technology on student attitudes, engagement, and learning. The findings revealed that mobile technology fosters positive student perceptions of collaborative learning but may lead to increased disengagement during class. Furthermore, students who composed paragraph responses on mobile devices exhibited significantly less critical thinking compared to those using a computer keyboard or handwriting.

Figure 2. Survey on the usage of learning devices



***Source:** Result of researchers' survey*

In Vietnam, numerous studies, conducted by both local and international authors in Vietnamese and English, have explored the use of mobile phones in the context of teaching and learning. These studies reveal that students highly value smartphones for meeting their educational and work-related needs (Nguyen Xuan Nghia, 2015).The results of the survey conducted by the authors on a sample of 255 subjects also yielded similar results, with a total of 92.5% of survey participants believing that smart learning devices enhance knowledge and learning skills for users. However, a substantial portion of smartphone usage among students is attributed to entertainment rather than academic purposes (Nguyen Xuan Nghia, 2015). There have been innovative initiatives, such as leveraging apps like Edmodo (Binh N.T.T, Dung D.T.T, 2019) and CNNPhysics (Yen P.T.H, 2023), as well as the incorporation of smartphones in domains like physics education (Nguyen The Lương, 2021), for learning through smartphones. Nevertheless, these studies often fall short of providing a comprehensive assessment of the positive or negative impact of smartphone use on academic outcomes, focusing primarily on the purposes and applications of smartphones in education. For teachers, the convenience of using smartphones extends to tasks like storing educational materials and connecting with students for assignment submissions. On the other hand, students often utilize smartphones not only for academic purposes but also to stay in touch with friends and reach out to their instructors regarding course content, assignments, and accessing information for their coursework. Furthermore, mobile phones play a significant role in facilitating online learning for both teachers and students (Mcnabb, Marion Elizabet, 2016; Maheshwari, G. (2021), serving as a valuable tool for accessing educational resources and materials needed for successful completion of assignments and coursework.

Laptop: Inside lecture halls at many universities, laptop computers are increasingly prevalent. At least 180 universities in North America have made laptop or notebook computers mandatory for their 1st year students. (Barbara E. Weaver, Linda B. Nilson, 2005). The list also expanded to other countries such as Japan (Ehime University, Hiroshima University, Tokyo international university), Singapore (NUS, Singapore Polytechnic, Nanyang Polytech, UWCSEA) Furthermore, instructors have adopted the practice of posting lecture materials, including slides, on online platforms to facilitate real-time access for students during lectures (Babb & Ross, 2009). In a study carried out in

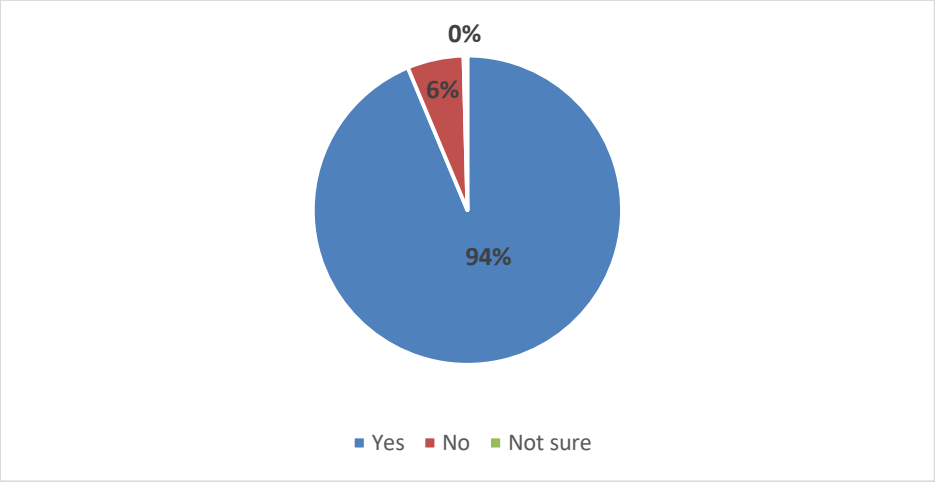
2015 by Santamarta and colleagues, the focus was on demonstrating the significant potential of tablet PCs as educational tools in the classroom within the context of three Spanish universities. These institutions recognized the tablet's versatility, portability, and functionality as attributes that made them exceptionally well-suited to enhance the educational experience, especially within engineering degree programs and master's courses. The findings of the study indicated a growing trend in the adoption of technology within Spanish university classrooms. Notably, technological devices were increasingly replacing traditional materials, including textbooks and notebooks, indicating a shift towards a more tech-infused educational environment. Laptops were also reported to be used effectively in the classroom provided that the traditional lecture-based format is replaced with a more active approach to teaching (Robin H.Kay, 2011).

In the context of Vietnam, the utilization of laptops for educational purposes has transitioned from novelty to norm, significantly accelerated by the imperative shift to online learning during the COVID-19 era. This transformation has been underpinned by the manifold advantages that laptops offer to both educators and students. Remarkably, the post-university entrance exam period ushers in a noteworthy surge in laptop sales, marking the commencement of the academic year, with prominent brands such as CellphoneS and FPT Shop experiencing a remarkable upswing in demand, fluctuating between 16% to more than 20%. This surge bears testament to the pivotal role that laptops play in the academic landscape of Vietnam, establishing them as indispensable tools for both students and teachers. Moreover, the integration of laptop-related teaching and learning methods has permeated the educational fabric of Vietnam, extending even to the secondary school level, as exemplified by the Vinschool laptop requirement. Younger students, particularly, have harnessed the potential of laptops for various scholastic endeavors, ranging from online assignments, presentation creation, reading, to accessing scholarly resources. This practice provides students with a flexible and dynamic approach to learning, one that not only adapts to the evolving demands of the digital age but also enhances their overall educational experience. At the higher education level, students have increasingly gravitated towards bringing laptops to lectures, capitalizing on the device's versatility. Laptops serve as indispensable tools for note-taking, facilitating group assignments, and fostering collaborative discussions among peers. Furthermore, the impact of laptops on academic performance is not limited to the realm of convenience; it extends to the method of note-taking. The prevailing assumption is that digital note-taking on laptops presents a distinct efficiency advantage over traditional paper-based methods, primarily attributable to the swifter typing speed. Hence, it is reasonable to infer that students using laptops for note-taking may experience an improvement in learning outcomes. For educators, laptops offer an array of benefits in terms of content preparation and presentation delivery. Creating teaching materials and slides on laptops is a more convenient and engaging endeavor, allowing instructors to seamlessly integrate multimedia elements, such as images, audio, and videos, into their instructional content. Additionally, the digitalization of administrative processes, such as attendance tracking, through the university's website system, yields substantial time-saving advantages, facilitating more efficient management for educators. Beyond administrative tasks, laptops also serve as essential tools for pedagogical innovation, empowering educators to conduct research, analyze information, and enrich their teaching methodologies. Furthermore, the mobility factor of laptops distinguishes them from their desktop counterparts. The flexibility of working from diverse locations, such as libraries or cafes, endows laptops with a unique advantage in terms of convenience and adaptability.

Notably, despite the pervasive presence of laptops in Vietnamese educational settings, there is a conspicuous dearth of comprehensive research examining the implications and applications of laptops in teaching and learning. This research lacuna underscores the urgency of conducting

empirical studies to shed light on the nuanced dynamics of laptop integration in education within the Vietnamese context. Addressing this research gap, our study engaged 255 randomly selected participants, seeking to provide a deeper understanding of the significance of smart devices, particularly laptops, in the realms of work and education. The findings underscored the overwhelming consensus, with almost 94% of the respondents emphasizing the paramount importance of smart devices in facilitating their professional and educational pursuits. While a minority voiced reservation, the majority unequivocally recognized the intrinsic value of these devices, paving the way for a nuanced exploration of the role of laptops in the educational landscape of Vietnam.

Figure 3. Survey on the importance of learning devices



Source: Result of researchers' survey

In the educational landscape, projectors have emerged as indispensable smart devices, complementing the ubiquitous presence of smartphones and laptops. The contemporary projector market boasts remarkable diversity in terms of pricing, models, and intended use. Notably, interactive projectors have captured the educational realm's attention, as institutions like Van Lang University and the National University in Hanoi have undertaken trial deployments (Thuy Nga, 2020; ViewSonic, 2023). Nonetheless, the predominant projector variant employed in Vietnamese classrooms remains the conventional projection system, designed to display content meticulously prepared by instructors on a spacious canvas, enabling students to follow the educational narrative closely. The functional significance of projectors spans several domains. First and foremost, the utilization of projectors emancipates educators from the laborious and often unhygienic task of handling chalk and dusty erasers. Extended exposure to chalk dust poses health risks, potentially resulting in respiratory ailments such as sinusitis, bronchitis, and allergic rhinitis. The deployment of projectors mitigates this health hazard, as it markedly reduces the necessity for teachers to interact with chalk, thereby minimizing their exposure to dust particles. Secondly, the use of projectors effectively resolves the longstanding issue of information legibility on traditional blackboards. Projectors designed for educational purposes facilitate the clear and unambiguous display of content, characterized by larger, easily discernible text and images, while granting instructors the capacity to regulate brightness levels. This approach guarantees equitable access to information for students regardless of their positioning within the classroom, thereby enhancing the efficacy of the learning experience. Moreover, the assimilation of projectors augments the overall educational experience by imbuing lessons with enhanced dynamism and engagement. These lessons incorporate visually stimulating elements, such as images, videos, and animations, fostering a more immersive and practical understanding of the subject matter. This facet bears particular significance in disciplines

necessitating practical applications, such as technology, art, geometry, and mathematics. Furthermore, pre-designed presentations tend to streamline information, typically focusing on key concepts, thereby aiding students in grasping critical aspects of the lesson and simplifying the process of knowledge assimilation. By harmoniously blending diverse media forms, presentations can cater to a spectrum of learning styles, rendering the educational experience more captivating. Crucially, the adoption of projectors optimizes the efficient utilization of time for both educators and students. This technology significantly reduces the time devoted to manual note-taking, allowing instructors and students to channel their reclaimed time into discussions, group interactions, educational games, or practical simulations. Additionally, the convenience of effecting modifications, appending supplementary content, or integrating additional exercises for students through presentation slides underscores the multifaceted advantages of projectors in the realm of education.

Beyond the devices previously enumerated, the contemporary landscape of smart classrooms has witnessed the integration of a myriad of other intelligent tools designed to facilitate the teaching and learning process. These additional devices encompass interactive whiteboards, high-quality speaker systems, sensitive microphones, sophisticated camera setups, and an array of other technological instruments, each engineered to enhance the educational experience. However, it is essential to underscore that in the context of Vietnam, the widespread adoption of interactive whiteboards and advanced camera systems has remained somewhat limited, with only a marginal presence in the educational milieu. Thus, this research paper will primarily concentrate on the more prevalent and extensively employed smart devices within the Vietnamese educational ecosystem. While interactive whiteboards and cameras certainly hold significant potential for revolutionizing classroom dynamics, the current state of their utilization in Vietnam demands a nuanced examination. The decision to limit the scope of this research to devices with a more established presence in the local educational landscape stems from the pragmatic recognition that understanding the impact, challenges, and opportunities surrounding these frequently deployed tools is imperative for illuminating the broader contours of smart classroom integration.

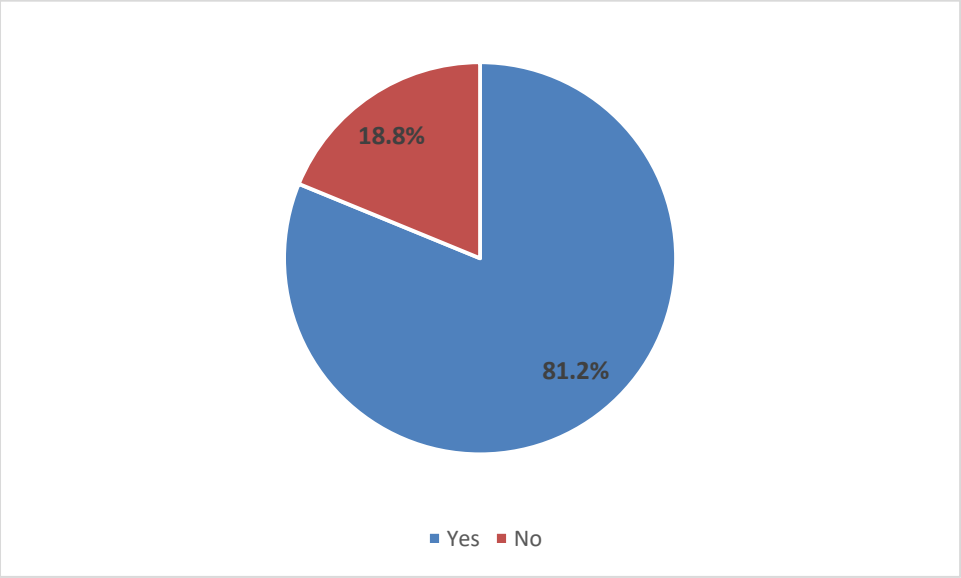
Challenges in education technology

The utilization of technology in education has emerged as a pivotal force, offering a multitude of undeniable advantages. Technology's power extends to the realm of inclusive education. Accessible technology and universal design have redefined the educational landscape, creating unprecedented opportunities for learners with disabilities. A notable statistic highlights the transformative impact: approximately 87% of visually impaired adults have indicated that accessible technology devices are progressively replacing traditional assistive tools (UNESCO, 2023). This shift towards accessible technology not only enhances the educational experience for those with disabilities but also underscores technology's role in dismantling barriers to learning. In addition to these digital innovations, technology has leveraged non-traditional educational mediums such as radio, television, and mobile phones to bridge the educational gap among underserved populations. A staggering revelation is that nearly 40 countries have harnessed the power of radio instruction, a testament to technology's ability to democratize education. Take, for instance, Mexico, where a program featuring televised lessons complemented by in-class support yielded a remarkable 21% increase in secondary school enrollment. This showcases how technology extends its reach to diverse learners, transcending traditional classroom boundaries (UNESCO, 2023). However, for all its transformative potential, the integration of technology into education remains a formidable challenge for a multitude of individuals. This challenge is twofold, impacting both those with access to technology and those

without. Bridging the divide in access and utilization of educational technology is a formidable hurdle that warrants close examination, as it directly impacts the quest for equitable and effective education.

The issue of technology distraction in educational settings has garnered substantial attention, with research findings shedding light on the complexities surrounding its impact on students' performance. A pivotal report from the Organization for Economic Co-operation and Development (OECD) revealed a significant observation: despite substantial investments in school computers and classroom technology, there was no discernible improvement in pupils' performance (OECD, 2015). This striking conclusion underscores the necessity of delving into the intricate relationship between technology integration and academic outcomes. Intriguingly, comprehensive data from international assessments, such as those administered by the Programme for International Student Assessment (PISA), have unveiled a nuanced narrative. These data suggest a negative correlation between excessive Information and Communication Technology (ICT) use and student performance, alluding to the potential pitfalls of technology's omnipresence in education. A notable revelation emerges from this extensive dataset: the mere presence of mobile devices can prove highly distracting to students, culminating in adverse effects on their learning experiences. Astonishingly, this distraction phenomenon has been documented in 14 countries, revealing the global scope of the issue. Despite the apparent distraction posed by smartphones and similar devices, it is remarkable that less than one in four countries have implemented a ban on smartphone usage in educational institutions (UNESCO, 2023). When it comes to the distinction between laptops and smartphones, an intriguing juxtaposition emerges. Laptops, characterized by easy Internet accessibility, often create an illusion of academic engagement. However, this apparent academic engagement may conceal a more insidious reality—self-interruptions that are, paradoxically, more disruptive to the primary task than external interruptions (Mark, Gonzalez, & Harris, 2005). This underscores the need for a nuanced examination of the role of laptops in the learning environment. Furthermore, a compendium of studies has illuminated the detrimental impact of utilizing portable devices for non-academic purposes within the classroom setting. This phenomenon is not restricted by intellectual capacity, as these findings hold true regardless of students' cognitive abilities (Fried, 2008; Jacobsen & Forste, 2011; Ravizza, Hambrick, & Fenn, 2014). The body of research consistently indicates that using such devices for non-academic tasks correlates with diminished learning outcomes (Junco, 2012; Kraushaar & Novak, 2010; Risko, Buchanan, Medimorec, & Kingstone, 2013; Rosen, Lim, Carrier, & Cheever, 2011; Sana, Weston, & Cepeda, 2013; Wood et al., 2012). These revelations underscore the need to explore the multi-faceted nature of distractions in the digital age. Moreover, it is imperative to recognize that the use of laptops not only affects individual users but also poses a significant distraction to their peers in the classroom. These distractions collectively form an intricate web of challenges that necessitate careful consideration and examination in the quest to optimize the educational environment.

Figure 4. Survey on usage of social networks or entertainment on smart learning devices

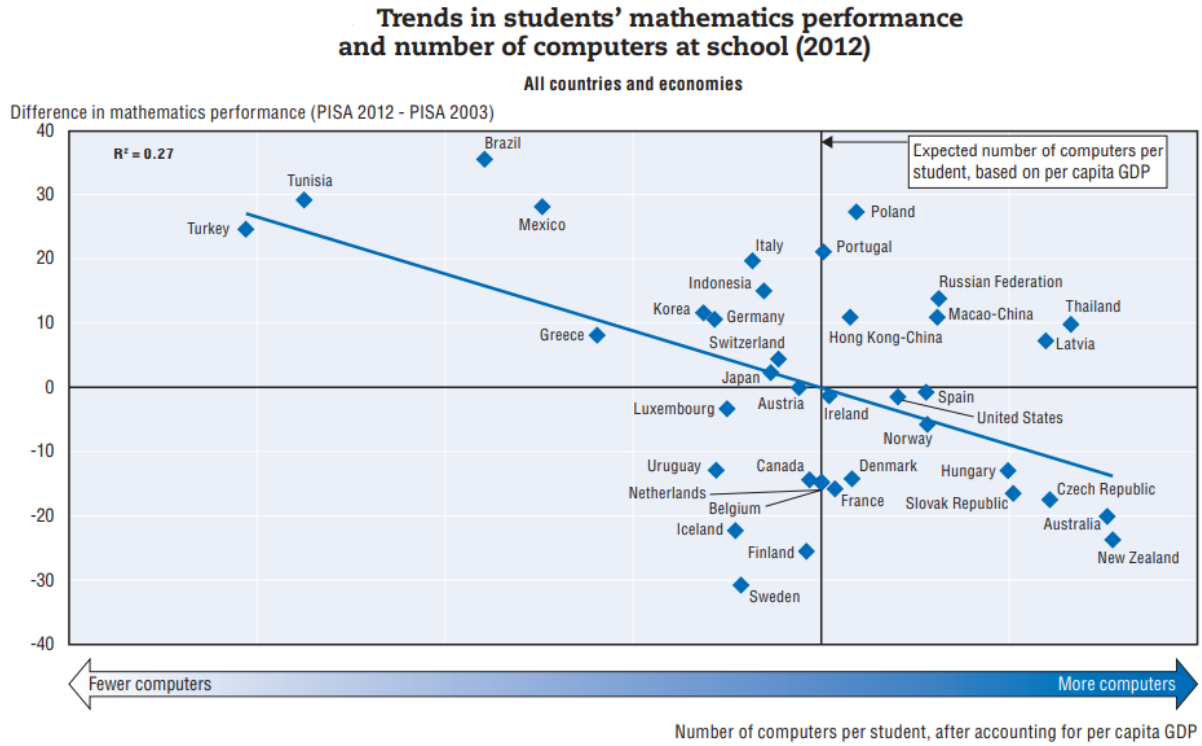


***Source:** Result of researchers' survey*

The research question at hand pertains to the prevalence of social media and online entertainment usage on smart study devices during study periods. While this subgroup constitutes only approximately 19% of the survey's participants, it signifies a substantial portion of individuals who engage in the simultaneous utilization of social media and online entertainment while studying. This observation underscores the potential of smart devices to act as distractors during educational activities, particularly among younger individuals who may still be developing the self-discipline necessary to resist the allure of games, YouTube, or social media. The apparent susceptibility to distraction, emanating from applications and notifications on phones, laptops, and tablets, is a noteworthy finding. A significant percentage of respondents expressed a keen interest in installing software that would lock their devices into a mode permitting access exclusively to study-related applications for predefined durations, amounting to 69.1% of the respondents. Furthermore, respondents offered valuable insights into potential strategies to mitigate distractions, such as implementing the Pomodoro technique, disabling message notifications and entertainment applications, restricting social media usage during study sessions, streamlining the functionality of educational apps to reduce diversions, blocking access to distracting web browsers during study time, and even proposing the establishment of a distinct internal network system for educational institutions or workplaces, exclusively serving educational objectives while restricting access to other websites. These insights collectively shed light on the multifaceted challenges associated with maintaining focus in the digital learning landscape.

In the end, the consciousness of the learners and users remains the most significant determinant. Regardless of the applications, tools, or disciplinary measures in place, their efficacy is rendered null if individuals persist in willfully bypassing regulations or resorting to alternative means of distraction to seek amusement while ostensibly engaged in studying or working.

Figure 5. Trends in students Mathematics performance and number of Computer at school



Source: PISA

Data from the Programme for International Student Assessment (PISA) reveals an intriguing trend: when considering a comparable per capita gross domestic product (GDP) and factoring in initial performance levels, countries that made fewer investments in introducing computers into their educational systems experienced, on average, more substantial improvements compared to nations with higher investments in this regard. This pattern holds across various domains, encompassing reading, mathematics, and science. The decline in writing skills and creativity is another concerning development. In the period from 2003 to 2012, most countries that reduced their student-computer ratios witnessed a deterioration in students' mathematical performance, even when accounting for differences in per capita GDP. This raises the question of whether these educational resources were genuinely directed toward enhancing learning outcomes. Surprisingly, measures of information and communication technology (ICT) usage within classrooms and schools often exhibit negative correlations with student performance. Notably, increased Internet browsing for school-related activities in schools does not yield higher average reading proficiency in the corresponding countries. In fact, countries where students more frequently use the Internet for schoolwork tend to experience a decline in reading performance on average. A similar pattern holds for mathematics proficiency, with countries or economies where a larger proportion of students use computers in mathematics lessons tending to exhibit lower overall proficiency in this subject.

In their in-depth exploration of the repercussions of the transition to online learning during the COVID-19 pandemic, the research team, comprising Duc-Long Le, Thien-Vu Giang, and Dieu-Khuon Ho, conducted a comprehensive survey involving both university educators and students. Their primary objective was to shed light on the potential challenges and disparities associated with the utilization of technology devices. Amid this extensive survey that elicited insights from 150 educators, two pivotal perspectives emerged, both underscoring the difficulties linked to access and

usage of technology tools. These challenges were notably conspicuous among specific demographics. The first viewpoint highlighted the considerable hurdles experienced when grappling with laptops, which prompted some educators to turn to their own family members, particularly their technologically savvy offspring, for assistance. This phenomenon emphasized the learning curve and adaptation challenges faced by certain educators, especially those who may not have been exposed to advanced technology in their teaching careers. The second perspective drew attention to the pressing issue of unequal access to laptops and smart devices among students. This concern extended far beyond isolated incidents and cast a spotlight on the systemic barriers within Vietnam, a country still in the process of development. The disparities were particularly pronounced in rural and remote areas, and they significantly hindered both educators and students who were constrained by economic limitations. This circumstance was more pronounced among older educators, for whom digital literacy was less ingrained, and it was most acutely felt in smaller, remote communities. These findings underscore the real-world challenges faced by certain groups when it comes to accessing and effectively utilizing technology devices. They highlight the significance of addressing these accessibility issues in the context of modern education, particularly in times of global crises such as the COVID-19 pandemic. By bringing such disparities to the forefront, it becomes increasingly clear that promoting equitable access to technology is a critical imperative for ensuring inclusive and effective education.

3. Methodology

Literature Review: An exhaustive examination of relevant literature, including research articles, academic publications, reports, and books, pertaining to the use of smart teaching devices in the Vietnamese educational landscape is conducted. This literature review encompasses both local and international sources to provide a holistic understanding of this emerging trend.

Data Analysis: This research involves the analysis of available data from various sources, such as government agencies, educational institutions, and official reports. By scrutinizing these data sets, we aim to gain insights into the statistical trends and patterns associated with the adoption of smart teaching devices within Vietnam's educational sector.

Case Studies: In addition to the quantitative analysis, this study also delves into specific case studies. These case studies examine how educational institutions in Vietnam have integrated smart teaching devices, shedding light on practical examples, challenges, and outcomes. The aim is to provide a real-world perspective on the evolving trend of smart teaching devices in the Vietnamese educational landscape.

Content Analysis: This research incorporates content analysis of media reports, social media discussions, and online content that are relevant to the deployment of smart teaching devices in Vietnam. This approach enables an exploration of public perceptions, concerns, and reactions concerning this trend, further enriching the study's insights.

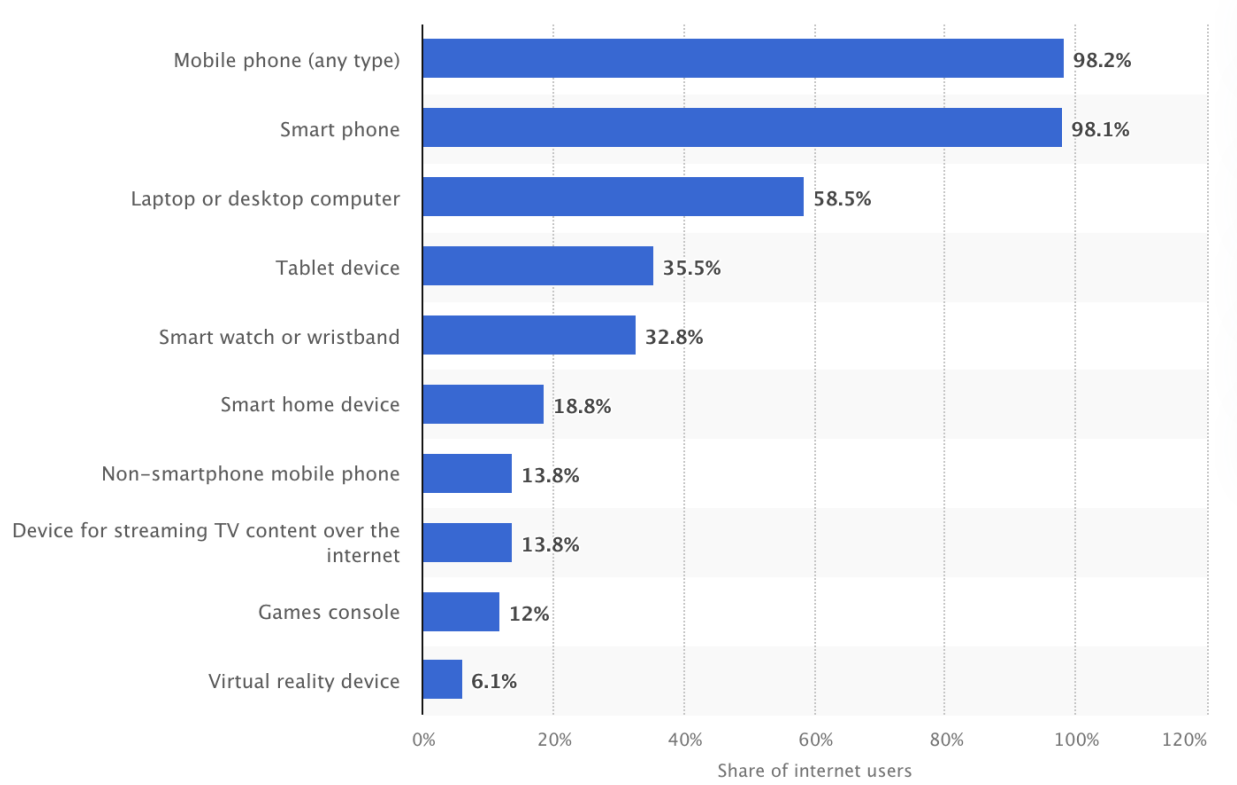
Survey Method: The author conducted a survey involving 255 respondents, comprising educators, students, and other relevant stakeholders in the Vietnamese education sector. The survey method allows for the collection of primary data, including opinions, attitudes, and experiences of individuals directly involved in or affected by the integration of smart teaching devices in Vietnam.

Comparative Analysis: To offer a comprehensive perspective, this study conducts a comparative analysis. By comparing the trends and findings from Vietnamese studies with international research and studies from countries facing similar educational challenges, we aim to identify best practices, potential solutions, and lessons that can be applied within the Vietnamese context. This broader outlook enhances our understanding of the smart teaching device trend and provides insights into how Vietnam compares to global developments in educational technology.

4. Conclusion

In conclusion, this research provides a comprehensive overview of the digital transformation in Vietnam's educational landscape, underscoring the profound impact of smart teaching devices. The data released by the Ministry of Information and Communications in December 2022 reflects the nation's rapidly growing digital population, with 72.1 million internet users. Remarkably, smart devices, especially smartphones, laptops, and tablets, have become integral to education in Vietnam, with 98.1%, 58.8%, and 35.5% penetration rates, respectively. This widespread ownership of technology devices signifies Vietnam's readiness to embrace technology as a fundamental component of its educational system. The government's commitment to promoting digital transformation in education is evident through initiatives like Directive 131/QĐ-TTG 2022 and Decree 109/2022/NĐ-CP. These initiatives aim to strengthen the application of information technology and digital transformation in educational activities and reflect Vietnam's dedication to enhancing its educational sector.

Figure 6. Device ownership among internet users 2022 in Vietnam (3rd quarter)



Source: Statista

The evolution of smart teaching devices has revolutionized teaching methods, transitioning from traditional methods to the integration of multimedia and interactive technology. These tools have significantly enhanced student engagement and learning performance, as demonstrated by both local

and international studies. The survey conducted on 255 participants, representing diverse backgrounds, further confirms the pervasive role of smart devices in education and work in Vietnam. It highlights that 100% of participants use smart devices for learning or work-related tasks, with mobile phones (91.3%) and laptops or desktop computers (90.2%) being the most preferred devices. Notably, 92.5% of survey participants believe that smart learning devices enhance knowledge and learning skills. While the advantages of technology integration in education are evident, challenges remain. The paper delves into the potential distractions and the importance of responsible usage, particularly regarding issues of access disparities in rural and remote areas. These challenges underscore the need for equitable access to technology to ensure inclusive and effective education. The survey results also draw attention to the issue of technology distraction, particularly concerning social media and online entertainment. It is clear that technology presents both opportunities and challenges, demanding a balanced approach to maximize its benefits while minimizing potential distractions. Furthermore, a comparative analysis reveals that Vietnam is not alone in facing these challenges. Many countries have grappled with technology distractions and the need to adapt educational systems to a digital age. The experiences of other nations provide valuable insights for Vietnam's ongoing efforts to optimize its educational landscape.

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