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The Use of Mobile Device in the School for Learning and Teaching System a Literature Review

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Abstract. Students have significantly increased the usage and possession of mobile digital devices, contributing An improvement with the use of personal Phone devices for educational environments. The objective of this research was to assess the viability of integrating digital technology into the learning and teaching process. However, this literature review configuration was how utilizing mobile technologies facilitates educational content for teaching and learning purpose. The review process started with a search engine, Google Scholar and IEEE, to search for papers with keywords by using search and review methods. The impact on student learning of the integration Around portable devices was explored in this study and found It seems that the total impact that use devices is great for education. than using any technology or using desktop computers. These findings indicate That it is important for teachers to use several Various and sundry instruments To build motivated active learning, but each one of them instrument The major purposes are both and constraints.

Keywords: Mobil device, Learning system, Teaching system.

1 Introduction

There has been an increase in the use of android platforms, so the theory is that devices of these type can have important in either the learning and teaching method [1]. Since teachers consider the best ways to encourage learning by using connectivity, it really is essential to explore mobile learning as well as mobile learning interactive learning methods and the right ways to be able to incorporate to build the two successful student learning experiences. The problem is that certain mobile device educational uses trigger for students who have problems using the apps, negative experiences [2]. Despite the implicatures, however, benefits using smartphones for mobile technology to improve current studies have found mixed results on the effects of mobile devices, computer accessibility, various teaching types, and academic achievement. [3], there have been very few experiments in the about when to use mobile devices best and the effectiveness of using it.

The use of devices, personal digital assistants, tablet PCs, laptops and portable computers for digital technology is digital education. [4][6]. Educational technology can be characterized as unrestricted by time and place, in terms of the learning environment, resources and interactions. [7]. Klopfer *et al.* found that mobile learning's success in radically changing mainstream digital learning is based on five features: connectivity, accessibility, responsiveness,

management instructions and individuality. [8]. These features mean educational technology can support the specific needs of the students who publicly support learning, have greater student learning accessibility, and provide activities that are both timely and faster, thus increasing learning motivation and learner accomplishments.

In a variety of different ways, mobile devices can be used to improve learning experiences. Data and knowledge from learners it can be complex, incorporated limited Spacetime, enabling for both teachers and students, modern forms of immersive and multidisciplinary learning are. The problem for teachers and developers has become one of the best recognizing and figuring out that these methods can be better used to promote learning. 'Phone' typically means mobile and private, like smart phones, with regard to technology. Application of m-learning for students in remote areas in some countries communication and the creation of media material are taken as a benefit.

Hwang et al. presented a wide-ranging discussion of mobile and pervasive learning studies conducted in six publications in the time between 2001 and 2010 respect study about the use of digital technology in education. [5]. This one, Another mobile learning model offers a framework for choosing the right phone Categories apps for various effective learning categories. It is well matched with taxonomy to establish essential learning experiences [9]. The model Fink reaches further Bloom's behavioral taxonomy of trying to learn [10] and consider elements education, including teaching students how and when to learn better and improve life talents that influence social interactions, the capacity to adapt and interact with change [9].

Many other studies have generally used mobile devices as a kind of encouragement application for such a tool promote Inspiration and intention improve commitment, and secondly as a material developers production, with regard to the teaching and learning functions that devices provide in education. [11]. The goal it was for the present analysis to determine the effectiveness of the incorporation of digital Computing into the educational environment. However, this literature review configuration was how the use mobile technology facilitates educational content for learning and teaching purpose.

2 Literature Review

2.1 Analysis Of The study The Use Of Mobile Devices In The Education System

Accoriding Donner in — A Existing Literature reviews 200 recent research of cell phone usage to use in the developed world: change impacts within the developing world to mobile use [12]. He identifies his research into three general themes, with Mobile Effects on Education being one of them. A large number of studies in Tanzania [13] and Thailand [14] Evaluate cell phones as an e-learning aid, Donner says. Both claim that mobile simplicity, affordability and portability create it a perfect match in places where PCs and internet connectivity can be limited, for educational initiatives.

Kumar et al. claim that they are handheld devices like cell phones a great medium for providing rural children with educational opportunities in locations days and times that are simpler than formal education [15]. A 26-week research is to investigate the level for whom children use mobile phones happily. such as to access teaching material, cellular phones. Their findings indicate a logical explanation degree Motivation and scholastic learning. Ally Taylor, Koole and Blodgett it specifies that there really is a wide potential for learning from digital phone and offers a structure to help clinicians develop practices suitable for mobile learning.

Cellular applications are rapidly being In the industrialized world, supported, according to Kam *et al.*, and a so many of these phones have digital gaming and photographic systems [16]. Such the equipment is a successful out-of-school device learning vehicle complementing mainstream schooling. In specific, they claim It's by playing video games on mobile phones, learning English as a Second Language [ESL] offers a possibility to be able to significantly extend by making it possible to acquire ESL with in environments that can be more comfortable than school, the context of English learning.

Then with information in real - time of mobile devices in developed regions, Brown states, are necessary can imagine of a prospect in which play on mobile Phones a crucial educational position in developed nations [17]. Brown's according to [17], although there are far more people with mobile technology since there are opinions on how schools work, would be influenced by mobile technologies, most believe the m-learning is starting to put a significant role in e-learning. There are already various mobile technology applications in schooling, from the exchange training content and transactional data wirelessly, to the ability to understand.

A mobile learning analyst has changed his stance upon buying a 3G android phone, according to Anderson [18]. He writes in the remote teaching Foreword: Converting Education and Training Distribution Press, University of Athabasca-The google play store provides every day, I have even more forms (including 75 categorized below apps) that this phone [iphone 3G] will transform Into a universal source of ideas and schooling and ubiquitous information.

With the advantages of convenience (being easier to use and learn) and enhanced connectivity, Many desktop computers perform many of the functions of android platforms. (being usable anytime, anywhere) [19]. Mobile phones are not just communication devices for contact between individuals, according to Prensky; they are literally computers which fit within your pocket, are always there for you, and seem to be on. [20]. Mobile phones can be used, like all electronic devices, to learn.

In their analysis of 154 papers, Hwang *et al* was found the use of mobile and centralized learning dramatically accelerated since 2008; the majority of scientists learned higher education linguistic students and the most commonly studied areas were, computer technology and engineering. Froberg *et al.* classified 102 digital learning programs and found that, within a physical context and an official environment, most mobile learning activities actually occurred, like a general education environment, in various settings [21]. Mobile phones' effect on current academic has been investigated by Wong *et al.* [22]. Automated teaching refers to a learning process. paradigm that in a number of conditions, students can learn to whenever they choose to learn, and that those who will easily be able to and rapidly shift from one scenario or context to another [22],[23]. A selection out of 54 papers on the use of mobile devices for the purpose of promote learning effortlessly was selected All 54 papers were analyzed and found to have 10 characteristics, including formal and informal learning, personalized and social learning., and multi-duration and location learning.

2.2 Learning and teaching system

Mobile device learning & teaching has been represented and identified in a multitude of ways. Transportable technology such as cell phones, laptops, tablets, desktop computers, and netbooks have been used in mobile devices [24]. Keegan acknowledged that the actual mobility of the system should be the subject digital learning for [25]. In other ways, m - learning can be words, restricted to learning on devices which a lady can carry in her handbag or a gentleman can carry in his pocket" [25]. Moreover, Traxler and Huemer established equipment to which trainees are used to learning. "carrying everywhere with them" and "regard as friendly and personal" [26]. Many of the principles that the publications contain concentrate primarily innovations; some focused on the learning process; others focus on technology; aim to incorporate many of them [27]. Crompton, more commonly, has confirmed that Phone connection is an improvement to the Sharples (Sharples & Taylor) concept. "learning across multiple contexts, through social and content interactions, using personal electronic devices" ("Defining Mobile Learning") [28]. Mobile devices were identified as In this article, Designed to control devices, including tablets or Phones computers with continuous Internet access, such as through a cellphone or Wi-Fi connection.

For teaching and learning purposes, it can be digital learning. described usage of android platforms, such as mobile phones, tablets, and portable sensors. Features like social connectivity, portability, sensitivity to context, and uniqueness; mobile appliances also Increased computer-based education used incorporated for education - learning environments [29]-[33].

For example, not just digital technology, but promotes conventional Teaching in class discussion in terms of supporting creative teaching methods while increasing the influence of various teaching approaches, such as collaborative learning, [34], inquiry-based learning [35] and game-based learning [36]. In addition, attendees of different evolutionary ages, through the popular deployment of digital learning by pre-schoolers [37] to graduate students [38][39][40].

The problem is that certain mobile device educational uses trigger for students who have trouble using the applications, unpleasant experiences [2]. It could also be learners overwhelmed multitasking devices and discouraging fellow students from using technology [41]-[44]. Instead, some report on digital technology, increases the understanding for interactive education by students [45]. Mobile devices and software for education should not be able to "complicate the learning process, but facilitate mobile learners' learning" [46]. Teachers use smartphone applications and response systems for this purpose. in the classroom enabling students to respond to teacher questions based on the content of the course. It's been shown to increase student learning standards, engagement and real test scores. [47],[48]. Though several teachers a 2013 study of desktop interactive learning studies found a lack of adequate research on existing communication devices and small groups in their classes. [49]. A 2016 schema of 110 research and quasi-experimental studies conducted around 1993 and 2013 investigating the effects of mobile device implementation on student learning found that the overall effect of using mobile phones has been better for learning than using portable devices or not using devices at all [11]. Via mobile help, the throughput rates of learners could be increased and the consistency of the student environment improved. Classroom environment, could situate it self Limited in practice where research had previously taken Position.' The wireless technology sector is evolving extremely rapidly. Almost all of the innovations contribute to higher viability of m - learning and the complexity of the course content that can be designed for mobile learning. This has greatly promoted the expansion of digital learning and contributed to the for much of mobile phone classes. Illustrated approaches to learning of relevant Mobile-based learning practices are summarized below An summary of the challenges of integrating mobile devices into educational systems should be given.

Using Cole and Chan's concept, It is possible to view student participation as "the extent of students' involvement and active participation in learning activities" [50]. Student engagement is an important learning tool that has many educational advantages for students through active participation in the classroom. [51]-[54]. The faculty and students consider shared learning environments or small groups as one successful method for fostering student participation and learning [55]. The overall satisfaction of learners there was a greater satisfaction with small groups than their satisfaction with online discussions or complete-class in one report [56]. Such students indicated it was more probable that small groups were more willing to "stimulate interest" and help them engage in the material. Although While teachers can use highly structured small groups with transparency mechanisms incorporated into several strategies for pursuing student engagement have a good chance of involving more students than broader group conversations. [57]. A few of these accountability measures involve assigning assignments to each student and requesting a written response from small groups based on their conversation, so that students engage actively during the course of their discussions collective classroom assessments [58].

It has also been shown that mobile learning is useful in enhancing student flexibility, involvement, and communication [59][60][61]. Studies have proved that the use of mobile devices for education improves interaction via the immediate provision of access to the information and improving learning fingers [62], but caution that smart phones hen training has been deliberately designed to enable optimal use of the technology, it is most conducive to learning.

3 Method

In colleges, the use of mobile devices for programs learning and teaching is the subject of this literature review. The review process started with a search engine, IEEE and Google scholar, By use of search and review methods, in order to locate posts with keywords: "smartphone, android, mobile device, learning and teaching system". The conditions for inclusion in this research were as follows:

- (a) Quantitative outcomes of the relationship between mobile device use and the teaching method for learning
- (b) The research was done in the field of education.
- (c) Using the English language
- (d) The absence of dissertation and thesis

A total of 5307 papers have been collected from the literature hunt. There were 2183 articles from Search engine, 1566 articles from IEEE and 1558 articles from Google scholar. Among the 5307 articles, 686 duplicates were excluded, and 236 were identified based on the title and abstract review. A total of 40 articles were fully reviewed by the researchers except for 181 articles without full text among 236 articles. Among them, 141 were no mobile learning, no android, no learning and teaching system. A total of 12 articles were finally selected and among them. The flow diagram of the study selection system literature review process is shown in Figure 1.

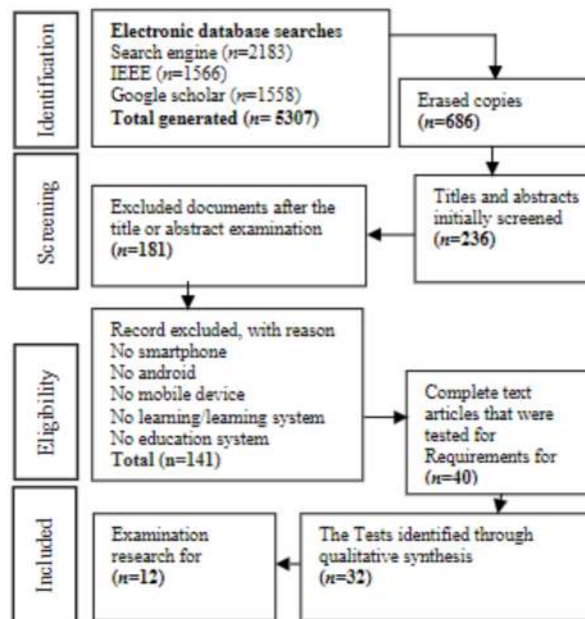


Fig.1. Flow of study selection systematic literature

Table 1. Mobile Device Use in the School for Teaching and Learning System

Author(s) and year	Title	Country	Methods of Research	Sample	The Use of Mobile Device
Banavar et al. (2014) / [63]	Embedding Android Signal Processing Apps in a High School Math Class – An RET Project	Arizona	Research and Development used Smartphones	30 students	Smartphone android base
Chin and Chang (2011) / [64]	A Sustainable ICT Education Ontology	Korea	Designing Data Flow Diagrams and Designing Entity Relationship Diagrams	ICT educational provider	Method to sustain ICT education as way of resolving problems related to low student enrol in the sector
de Lima et al. (2014) / [65]	³³ Application of Remote Experiments in Basic Education through Mobile Devices	Brazil	Research and Development used Smartphones	Brazilian Public High School Second Year	Remote Smartphone Experimentation (MRE)
Futcher and De Kock (2016) / [66]	²¹ Mobile Device Usage in Higher Education Institutions in South Africa	South Africa	Individual patient level case study summary	213 changes in higher education	Mobile device (laptop, tablet, e-reader, smartphone)
DePue et al. (2016) / [67]	²⁶ An Android App for Spatial Acoustic Analysis as a Learning Tool	USA	Research and Development used Smartphones	²⁰ The effectiveness of this program has not yet been formally tested, but a favorable outcome is indicated.	Smartphone android base

Author(s) and year	Title	Country	Methods of Research	Sample	¹⁷ The Use of Mobile Device
Heflin, Nguyen, and Shewmakers (2017) / [68]	¹⁷ Impact of mobile technology on student attitudes, engagement, and learning	USA	Quasi-experimental research design and multimethod model of analyzing effectiveness	159 students in two first-year general education college courses	Mobile learning ar collaboration
⁴⁴ Jisha et al (2018) / [69]	An Android Application for School Bus Tracking and Student Monitoring System	India	Research and Development used Smartphones	administrator, faculty, parents and drivers	Smartphone andro base
Jeno, Grytnes, and Vandvik (2017) / [70]	⁷ The effect of a mobile- application tool on biology students' motivation and achievement in species identification: A Self- Determination Theory perspective	Norway	Research and Development used Smartphones	⁴⁵ 71 second-year bachelor students at a large university in Norway	Smartphone andro base
Kidi et al. (2017) / [71]	Android Based Indonesian Information Culture Education Game	Indonesia	Research and Development used Smartphones (waterfall methodology)	100 respondents	Smartphone andro base
Mwandosya and Montero (2017) / [72]	¹⁹ Towards a Mobile Education Tool for Higher Education Teachers: A User Requirements Definition	Tanzania	Design science research	161 academic staff	The specifications of a tool for mobil education ⁶⁶

Author(s) and year	Title	Country	Methods of Research	Sample	The Use of Mobile Device
Zuilkowski, Piper, Strigel and Kwayumba (2016) / [73]	Does technology improve reading outcomes? Comparing the effectiveness and cost- effectiveness of ICT interventions for early grade reading in Kenya	Kenya	ICT Study	The sample measured in January 2013 was 1580 students and in October 2013, 1560 students.	e-reader and tablet
Sung et al. (2016) / [39]	The effects of integrating mobile devices with teaching and learning on students' learning performance: A meta- analysis and research synthesis	ROC	Quantitative systemic research	110 participants	Mobile device (laptop, handhelds tablet)
Sung et al. (2019) / [40]	The quality of experimental designs in mobile learning research: A systemic review and self-improvement tool	ROC	The Rigor of Education Experiment Designs checklist	342 observational studies conducted from 2006 to 2016 in refereed journals	Mobile device (laptop, handhelds tablet)
Tang, Zhou, and Chen (2015) / [74]	A Game-based Curriculum and Learning Management Mobile Application for College Students	China	Research and Development used Smartphones	A classes	Smartphone andro base
Yumang et al. (2017) / [75]	Attendance Checker for Students of Mapúa University	Philippines	Research and Development used Smartphones	A classes	Smartphone andro base

4 Result and discussion

Based on the assumptions drawn from it though, analysis of the literature, the authors found that analysis of literature conducted in peer-reviewed journals the use of mobile devices as tools in school interventions has shown the net impact the use of android platforms in learning is better than the use of personal computers or the use of mobile phones as an intrusion.. Through we identified that many possible variations of applications for mobile devices, software and operation periods were found in the research. were applied to various user ages, subject concepts, teaching methods, and implementation environments. For handhelds, the impact of such use was greater the use of research instruction, along with lectures and self-learning, was more effective than the use of laptops. [73][74].

In different organizations and in different countries, study has performed out has been on the Implications of Mobile devices in the school system for learning and teaching. Table 1 indicates that study in schools and universities were conducted. The study findings have generally shown a positive and important impact between the usage of smartphone in schools for teaching and learning system. The findings this study raises concerns about the use of mobile devices in the classroom, specifically in the creation of academic objects designed to demonstrate analytical reasoning. [68]. Student work products made on mobile devices were rated significantly lower than those produced on laptop computers or paper and pen computers on evidence of critical thinking demonstrated by evaluation. Moreover, the pattern suggests that there was a substantial gap between the Heads-up group and the other two in participation and disconnection, slightly less engaged behaviors and more disempowered behaviors are seen by the Heads-up party. Like past scholars, have noted, it is important to carefully consider the design when designing instructional programming to ensure instead of complicating or distracting from learning, the mobile device and educational application offer opportunities to enhance student learning.. This was a research weakness that could have affected the understanding of such behaviors. Finally, using language, eye contact, gestures, and stance, it was easier to discern student learning through the nature of observational behavior than to discern engagement through the use of technologies..

The problem the educational use of such mobile devices creates negative experiences for students who have trouble using apps. [2]. Despite the suggested benefits of using mobile computing devices to improve computer usability, different however, researchers have typically present contradictory results on the influence of mobile devices on teaching styles and school performance. [76]. And very few researchers have analysed how to use mobile devices best and how to do so effectively.

Mobile devices are innovative in a world that is increasingly dependent on connectivity and access to knowledge, since they go beyond the borders of the institutional status of classrooms and lecture halls and their associated communication modes.. In order to be successful, they do not have to be limited to one specific place and time [75].

By using the mobile learning model, through a simplified process/features for interacting with partners and tutors and things using mobile communication network technology, target students have the opportunity to control all materials and information relevant to training on their portable devices. [39][40][70][77][63][65][66]. Use of portable devices for learning at school and teaching method is accepted with this paper. The framework proposed offers unparalleled versatility and comfort for teachers to take part in training courses and learning experiences to overcome many of the limitations present in the characteristics, the full impact

Informatics in the education system, sector needs to be reconciled and between technology elements, the educational background, and objectives (e.g., curriculum, absent on class, Processes for learning and teaching) and users (students & teachers).

Although most mobile technology research studies use surveys and experimental approaches, this may be partially due to the long-term commitment to educational application. To help with positive thought or meditation, many ventures have used mobile phones for. In addition, the teacher manages most learning tasks using mobile devices, with just a selection of learning process nature activities. There have been very few ventures using cooperatives or groups. collaboration with respect to communication functions. In addition, the overwhelming majority of studies used novice respondents; seasoned participants have been involved in little research. The vast majority of study has been found to concentrate on lower-level data and talents. when sorted according to educational objectives, and neglected higher-level activities such as review and assessment. Finally, using language, eye contact, gestures and stance, it was easier to discern student involvement through the nature of the evaluation activity than to detect engagement through use of technological advances..

5 Conclusion

Although this analysis has shown that mobile devices can enhance education. impacts, extremely long timeframes for action, better alignment of technology and education, and further assessment of higher-level abilities need to enhance the real effect of services for mobile learning. The way mobile devices and educational apps are used should not be they are used. complicate the learning process, but facilitate educational content. The use of these applications provides teachers with the opportunity to promote significant learning. These review investigated the indicated that the overall effect of using mobile devices appears to be better for learning than use of desktop computer or not using any technologies. These results suggest that educators can employ many different tools to create engaged learning environments but each tool has both primary functions and limitations. Since this study includes many cases, further research could include performing such a case study on integration with the curriculum and management information system in a school. The next step in our work is to add more interaction functions and knowledge management tools into this system. We truly believe that mobile learning will be an ideal learning style to facilitate our learning

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