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A Review of Smart Educational System and Students Performance through Teachers Efficiency in the United Arab Emirate

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Abstract

The smart development of education with these emerging technology helps students to study more effectively, flexibly and comfortably. Those l earners use smart devices to reach digital services through the wireless network and to immerse themselves in customized and seamless education. Smart learning, a term that defines digital learning, has been more diligent. In this study, we aim to develop a Smart Educational System conceptual framework to Increase Teachers Efficiency and Students Performance in UAE. Essentially, the research used the previous studies to demonstrate its focus on the precarious framework of smart learning instruction and the core characteristics of smart learning environments. The study concludes by proposing model of Smart Educational System Model in Increasing Teachers Efficiency and Students Performance in the United Arab Emirate. The policy implication of this study is that its implementation is expected significantly improve the smart education especially in UAE environment.

Keywords: *Smart Educational System, Teachers Efficiency, Students Performance.*

1. Introduction

All may be instrumentalized, intertwined and shaped by smart architecture by rapid technical developments, as can education. Over recent years, smart education has acquired prominence. In recent years, smart education-related educational ventures have been conducted internationally (i.e. Crook in 2020; Choi and Lee in 2012; Hua in 2012; IBM in 2012; Kankaanranta in 2014). The Malaysian Smart School Implementation Program was first established in 1997 (Chan 2002). Smart schools that are government-funded, targeted at improving the education system to establish the National Philosophy of Education vision and to produce students who face the needs of the 21st century. The Intelligent Nation master plan (iN2015) has been adopted by Singapore since 2006, a significant aspect of which is technology-supported education (Hua 2012). Eight future schools are set up in the program, and are built to build various learning experiences. Australia has partnered with IBM to establish a smart, cross-disciplinary education program for students (IBM 2012). The program links schools, institutions that are tertiary and the teaching of workers.

The SMART education project has been established in South Korea with the main tasks of restructuring the school framework and developing education services (Choi and Lee 2012). The role of technology incorporated into the classroom was demonstrated by the New York Smart School system (2014 study of the New York Smart Schools Commission). This focuses on rising academic success and training graduates for inclusion in the economy of the 21st century. Therefore, in 2011 Finland launched a smart learning initiative that offers systematic learning (SysTech). The initiative seeks to facilitate user-led and positive education approaches (Kankaanranta and Mäkelä 2014). The goal is to support 21st century education.

The United Arab Emirates (UAE) started to invest in the Mohammed Bin Rashid Smart Learn (MBRSLP) digital learning project in 2012, which is intended to mold their national schools 'modern learning experiences and society by introducing smart classes. In general, the emphasis and advances of smart education have become a recent phenomenon in the field of education. The list of education

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priorities in the UAE in general contains digital technology as a key priority; In fact, in Dubai, where His Highness Sheik Mohammad Bin Rashid Al Maktoum, Dubai's Vice President, Prime Minister and Governor, started Dubai school education programme in 2000. The first school to carry out this program, preceded subsequently by the schools of Abu Dhabi, was Mohammad Bin Rashid Al Maktoum Secondary School in an ambitious strategy to disseminate the learning to all schools around the world (ministerium of Education, 2013). Not many Middle East countries are active in the usage of ICT in public schools (Kapiszewski, 2017).

The United Arab Emirates is one of the developed countries that accelerated their schooling and development through knowledge and communication technologies and smart programs of education. Electronic learning has been introduced since 2000 in Dubai. The UAE Department of Education is developing a plan to provide students who feel awkward to raise their hands inside the classrooms with the possibility of sending teachers messages privately or through a classroom by using an instant messaging network to apply their questions electronically (O'Sullivan 2016). However, on the teachers' efficiency, there are many problems that posed many threats to the educational sector in UAE, many teachers are unable or not provided with the opportunities to attend some teaching training which would enhance their skills in delivering their duties as teachers. This tremendously affects the performance of teachers as well as students in UAE Abu Dhabi Education Council (ADEC, 2015).

The following sections discuss relevant theoretical principles for the advancement of smart education; suggest a methodological framework for research; and ultimately, the conclusion of the smart education approach will encourage scientists and educators who are involved in the creation and production of smart education.

2. Literature review

2.1. Smart Educational System

As an intelligent education system, smart learning draws upon sophisticated devices and technologies (Lee et al. 2014). Several academic studies have recently started to concentrate on the value and significance of concrete practices through which students are dealing with real life concerns (Hwang et al. 2008). It is necessary to build learning experiences that incorporate both actual and virtual worlds in order to place students in a true learning setting (Al-Shami *et al.*, 2018b). Simple learning, combining with other facets of mobile learning and all-round learning, is viewed as a one-to - one TEL model that learners will study at various locations and times, And, with the usage of intelligent personal tools, they may turn learning from one situation into a flexible way that includes formal and informal learning, individual and social learning. Many intelligent innovations, including smart learning environment, smart instructional programs, intelligent pedagogy, understand-how technology and so on, are built in order to improve education and teaching and support (Al-Shami *et al.*, 2018a). The learning platform is flexible for these adaptive learning techniques and is able to adjust teaching tools based on cloud infrastructure and learning analytics effectively and to use aggregated data through mass students to help gain insight into the creation and adaptation of Large Data curricula (NMC 2015). Furthermore, students who have smart devices will benefit from different related information from their surroundings (NMC 2015). Wearable technologies may incorporate knowledge about the venue, learning log, engagement with social media and tools for virtual reality into learning (Raja Rosly *et al.*, 2018).

2.1.1. Smart Learning Environment

In general, an effective, responsive and stimulating smart learning atmosphere (Merrill 2013). Students are often known to be the core of smart learning environment. The goal of the smart learning environment is to offer self-learning, self-pushed forward and tailored services that allow students to take courses themselves and access personalized learning material in their own way according to their personal differences (Kim et al. 2013).

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Koper (2014) has proposed to describe smart learning environments in order to facilitate better and faster learning as physical environments which have been improved by digital, context-aware and adaptive technologies.

According to Hwang (2014), context-consciousness, the capacity to have immediate and flexible student assistance and sensitivity to the learner interface and topic contents are the main requirements in a sophisticated learning setting. Smart learning environment not only allows students to navigate and communicate with daily opportunities and with learning environments in the best manner and at the right moment, but also offers the required learning feedback, advice or supportive materials.

A smart learning system focused on cloud computing was developed by Kim et al. (2011). The smart learning service assists learners in capturing and evaluating their actions by promoting insightful learning material. It aims at providing students with customized and tailored instruction.

In 2010 Scott & Benlamri developed a smart learning system focused on semantic web and ubiquitous computing, which is student-centric and service-oriented. The digital environment consists of omnipresent interactive learning environments that turn conventional digital spaces into smart ambient work environments through context knowledge and real-time learning (Alawi *et al.*, 2018).

According to Huang et al. (2012), the high digital environment considered to be a smart learning environment which makes learner conscious of the background of the learning materials, acknowledges the characteristics of the student, provides adaptive learning opportunities and realistic interactive tools. The goal is to help learners to learn quickly, dedicatedly and efficiently.

The smart learning system is learner-initiated and collective focused on shared resources and facilities (Doheir *et al.*, 2014, 2015) (Noh et al. 2011). Spector (2014) considered that the smart learning atmosphere promotes creative learner preparation and alternatives and should be reliable, productive, interactive, versatile, adaptive and reflective. And such apps may provide teamwork assistance, learning challenges and inspiration. By looking at such literature, we will see that the smart learning system stresses learner-centered, customized and adaptive learning programs, immersive and cooperative resources, practical awareness and all-round exposure, and smart learning environment.

2.1.2. Smart Education

The definition of smart education is introduced, focused on the generalities of the smart education in various countries and the value of the intelligent one. In Zhu and He (2012), "the aim of intelligent education is to build smart environments with smart technology to promote effective teaching, such that customized learning and motivated learners can be supported, thus promoting talents of information that are better orientated towards interest, better thought and stronger behavior" (Huang et al, 2012), according to Zhu and He (2012). In Figure 1., the theoretical framework is built on this concept of smart education. This framework outlines three core aspects of intelligent education: smart environments, smart pedagogy and smart learners. Smart education stresses the philosophy for improved teaching and hence should be called smarter education, presenting the criteria of smart pedagogy as a technical and smart learning atmosphere as a technological problem, and encouraging educational objectives to promote smart learners as an outcome. Insightful communities may be affected greatly by smart pedagogy. Smart pedagogy and intelligent experiences allow smart learners to develop.

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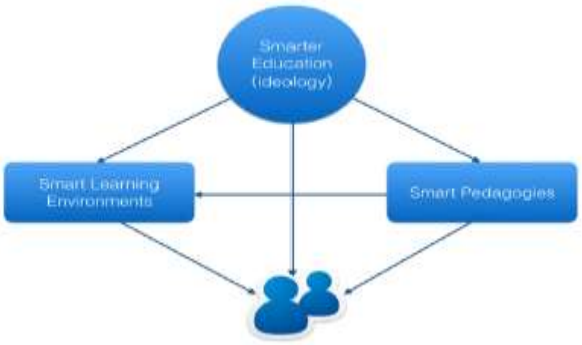

Figure 1: smart education

2.1.3. Smart Pedagogies

With any student in a school, learning goals and procedures are often the same. Yet, there are particular expectations of students of various experiences. The pupil needs a quality education that correlates to the comprehension expectations of content and success (Tomlinson and McTighe 2006). The classroom must be differentiated and react to various rates of preparation, interests and learning profiles for students (Tomlinson and Kalbfleisch 1998). Differentiated training stresses growing student's diverse requirements and cultivates critical awareness and key skills for learners. Students who have varying outcomes also have to work together in community or teams to accomplish a shared mission or reach a mutual aim, whether studying occurs in school or online. Through cooperation, students should foster extensive abilities, including logical thinking and problem-solving capabilities (Gokhale 1995; Stahl 2006). Cooperative team students may retain experience longer by information exchange and address the accountability for their learning on higher stages (Totten et al. 1991).

Education procedures can be oriented to the learning needs of learners, including needs, experiences, desires, expectations, etc. (Sampson et al. 2002). Personal interests are particularly relevant because it is motivated by a student's desire (Malone 1981) than external encouragement. The personalized learning guided by motivation stresses students 'desires which will encourage innate motivations and thereby facilitate unique knowledge for students (Atkins et al. 2010).

Intelligence is the capacity to understand stuff. The three fundamental aspects of effective thinking, critical thinking, creative thinking and realistic implementation, are defined by Sternberg (1999). As already mentioned, we promote the ability of learners to solve problems, take decisions, think creatively and learn interested. Such intelligence resources will be incorporated. This is analogous to learning transition or things that we studied in different circumstances and was intentionally implemented in certain applicable environments (Barnett and Ceci 2002). Learning is a cycle of generativity. The learner becomes an involved receiver of knowledge in order to develop practical awareness of environmental facts (Wittrock 1974). In this phase, a student functions. Generative education helps graduates to adapt their expertise to various circumstances flexibly (Fiorella and Mayer 2015). Intelligence may also be extended.

2.1.4. Knowledge Technology Use

Knowledge Technology Usage represents the latest cycle of technological advancement and growth which began in 2008 in the field of intelligent learning (Bartels 2009). It combines equipment, software, networks and digital sensors, smart tools, Mobile technology, Large Data Processing, artificial intelligence, and smart systems to incorporate many groundbreaking applications. All these tools will help

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learning in diverse contexts successfully. Above everything, the advancement of IT contributes to a new layer of intelligent computing and develops learning methods.

Awang et al. (2011) reported that teachers had little opportunity to explore suggestions for developing their teaching strategies. Therefore, the introduction of information management through ICT will at any time enhance the training and experience of teachers but entails high costs (Al-Lamy *et al.*, 2018) such as the procurement of facilities and facilities from the Smart Educational System.

Kler (2014) points out that a teacher can help to narrow down the information gap by using the smart education system in knowledge management. Via on-line in-services instruction, teachers may increase their awareness. If they will develop their abilities and accomplish an educational goal, they should be pleased. This is only feasible if teachers have the opportunity to access this knowledge through Smart Educational System.

2.2. Teachers Efficiency

In the globe, teachers are good and others are not successful at the intellectual schooling program. Mayer and Fiorella. (2015) found that two severe classes were active, one being production devices with high performance, and the other being ineffective. Ahmad Hambali (2015) has shown that in the smart education system, instructors based on gender do not differ substantially, but there are major variations based on a teacher's age and experience in teaching. Moreover, Juan et al. (2016) concluded that although teachers have strengthened teaching skills, structured phonetic instruction, fluency, vocabulary and part comprehension techniques after an online training session, teachers 'beliefs can have a beneficial influence on both the pre-service instructor and the in-service instructor. This is in line with Goh (2012) results, which show that professors have high yet moderate rates of satisfaction with in-service training. Also, the results indicate a significantly positive relationship between the degree of expertise and instructor satisfaction. The research showed that the degree of expertise and satisfaction of teachers with on-site instruction provided at schools did not impact independent variables such as gender and teacher experience. However, practice with race and education demonstrates the gap between knowledge level and satisfaction level. Sugunah (2014) noticed that the abilities of Smart Educational System teachers and the management of information in schools are moderately positive. He has proposed that the CPD would focus in schools on mastering the fundamental aspects of smart education programs. The course goal will not, though, be accomplished without successful execution. And it really was important to have a well prepared approach. The VLE application system proposal for higher education institutions was introduced to Areej & Abdulrahman (2011) and one concern was the training design programs for the sensitivization of the usage of VLE. Sharifah & Kamarul (2011) observed that instructors who were able to use the Smart Educational System approach to teaching had a good connection between work and behaviour. The usage of the Facebook Group in order to exchange information instead of establishing ties between teachers and students has been noticed by Zawiyah&Zuhri (2014). Aesaert et al. (2015) also notes that the absence of expertise in the intelligent education program of teachers would affect the success of students in school who cannot build their own knowledge.

2.3. Students Performance

The access to materials and exercises from portable devices is one of the challenges for e-learning. Personalized learning environments and innovative technologies need to be created that enable digital material to be customized and tailored to digital devices and thus eliminate barriers and enhance education efficiency, as mentioned elsewhere (Garcia-Cabot et al, 2015; Klašnja-Mili, et al, 2017). In order to incorporate such instruments, it is necessary to add methodological improvements to instructional materials (Al-shami *et al.*, 2019). The introduction of such technology from the earliest phases should be inclusive and straightforward with the aim of reducing the digital divide throughout high schools (Nikolopoulou, 2018). Adjusting the use of emerging innovations is essential in view of the variables identified in the technology adoption and technology use model. This would improve the adoption of

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digital platforms as a modern learning medium by students and lecturers (Sahlin, et al. 2017; Aliaño, et al. 2019). That is why the analysis of emerging approaches for digital education is important, in order to enhance students 'academic performance, and help teachers encourage the usage of emerging technology tools and support teaching and learning processes.

3. Smart Education System on Teachers Efficiency and student's performance

Computers have been seen to possess the ability to render a significant difference to school teaching, learning and administration. If there is a proof that it has had a significant influence on the work results and efficacy, substantial interventions would be deemed valuable to involve the implementation of information and communication technology (ICT) into schools like hardware, software, networking and workforce growth (Marshall, & Alston., 2017).

Due to its efficacy, particularly on employees and students 'success, the usage of the smart system in educational administration has expanded rapidly. The smart system also provides school administrators who have invested more time addressing the challenges of complex allocation (e.g. personnel selection, budget distribution, scheduling), and management of school activities. IT enables the decentralization and management of job assignments through an integrated collaboration network through real time (Kyvik & Aksnes, 2015). We have more versatility and networking, stressing interdependence, connectivity and continuous adapting to an atmosphere that is evolving (Castells, 2001). Schools utilize a smart network to facilitate a number of institutional tasks, including scheduling, performance reports, monitoring, financial accounting and the coordination of services and personnel. The smart system offers staff the knowledge needed for efficient and successful activity management.

Navimipour, & Zareie. (2016) defines intelligent education as 'a system of coordinating past, existing and expected knowledge in combination with internal activities and external intelligence. This serves the organization's strategy, management and activities processes by providing reliable details within the appropriate timeline to aid decision making. Telem (2013) describes smart education as "a program structured to suit school configuration, administration, education and learning disabilities'. Bruns et al. (2016) named the smart education method a 'discipline-oriented concept based on computer convergence with the organization's priorities.

In the field of decision taking, a smart education system performs a critical function, being able to detect contradictions in a system by itself, define a plan of action and take steps to regulate the environment. It is also essential in non-programmed decision-making as it supports by information supplied in search, review, assessment and decision-making and execution processes (Zareie, & Navimipour, 2016). Such applications will provide their users with stored data, research templates, notifications in real-time and simulated scenarios to help their decision-making process. Smart education has a significant impact on the success of workers in promoting their jobs, promoting contact with schoolchildren and offering a way to render teaching simple and informative (Kumar, 2013). Lee (2014) also examined variables influencing the success of students in the context of financial accounting and found that age and the behavior of students towards accounting had a substantial impact on the performance of students. Salamone et al (2016) have documented significant correlation between student success and academic satisfaction and service provided. They also stated that improved student success is related to the presence of career development activities and internships. Regarding context factors, they have no observational results indicating a favourable impact on high school success and school efficiency.

4. Research framework and hypotheses

Different theoretical frameworks have arisen from the continued advancement of educational technologies, to analyse and to describe variables that affect the adoption, rejection or ongoing usage of modern technology as conducting theories, cognitive-information processing theories, cognitive-constructivist theories of learning. (Ajzen, 1985; Ajzen & Fishbein, 1980; Venkatesh & Davis, 2000; Venkatesh, Morris, Davis, & Davis, 2003, Baars, 1986). Introducing and creating a Technology

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Acceptance Model (TAM), Theory of Reasoned Action (TRA) focused on Ajzen and Fishbein's models, Davis (1989). (see figure 2). The TAM claims that smart education systems and teaching quality are key determinants of the success of learners.

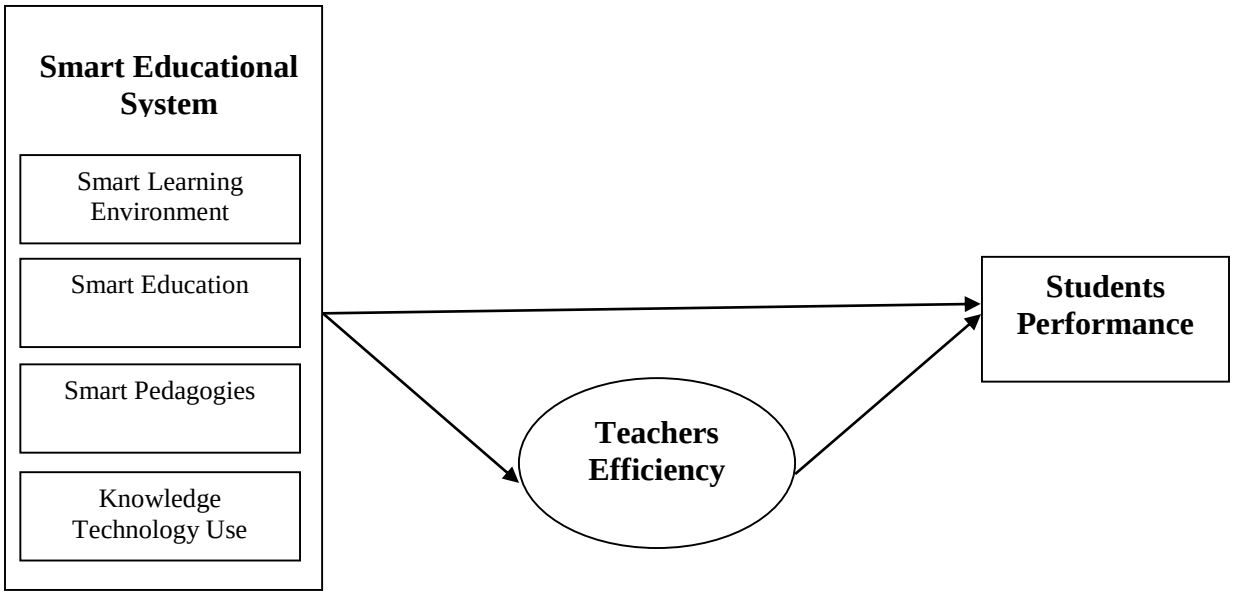

Figure 2 The Proposed research framework

The following hypotheses were generated:
H1: Smart Educational System will significantly and positively influence on Students Performance in the United Arab Emirate.
H2: Smart Educational System will significantly and positively influence on Teachers Efficiency in the United Arab Emirate.
H3: Smart Educational System will significantly and positively influence on Students Performance through Teachers Efficiency in the United Arab Emirate.

5. Conclusion

Smart education is a modern concept of international education. As mentioned above, the aim of this type of education is to enhance lifelong learning efficiency for the students in the United Arab Emirates. It focuses on contextual, customized and streamlined learning that encourages the growth of learners' knowledge and makes it simpler to solve the problems in smart settings. Smart education poses a range of difficulties through technology advancement and inside contemporary communities such as pedagogical theory, leadership in education innovations, leadership in learning teachers and educational systems and ideology. In our anticipation of Smart Learning Systems in the United Arab Emirates, smart learning environments will minimize students' cognitive load and enable students to concentrate on the integration of senses and promote the building of ontology. Students should also establish and enhance their learning experiences and thus support students in their growth in the whole (affective, mental and physical) manner. Students may learn and function in smart learning environments in a versatile way and thereby encourage the growth of their learners 'individual and mutual knowledge. In fact, students should be equipped with improved personalized learning resources to boost the aspirations of learners. The potential emphasis of this work is on the integrated and interoperable learning service and interaction between smart schooling systems

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