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Full Papers

Proposal of a multidimensional model between absorptive capacity and open innovation as a source of competitive advantage

L. Mateos-Espejel2 ,3, M. Tecpoyotl – Torres1 and Said R. Casolco1

[1] Centro de Investigación en Ingeniería y Ciencias Aplicadas – UAEM. Av. Universidad 1001, Chamilpa, 62209 Cuernavaca, Mor. - México.

[2] Facultad de Ciencias de la Comunicación – BUAP. 4 sur 104 Centro Histórico 7200. Puebla, Puebla México.

[3] UPAEP- Doctorado en Planeación Estratégica y Dirección de Tecnología. 17 sur 901 Barrio Santiago.C.P. 7410, Puebla - México.

E - mail: Said.robles@uaem.mx

Abstract

Nowadays developing countries like Mexico are suffering of a lack of commercialization of technological and scientific developments produced by universities and research centers. This gap is owing to the fact that public policies are based on an unrealistic perspective (Espinoza and Stezano, 2015), since they only consider that the factor to constituting innovation is the transfer of knowledge based on the commercialization of research results through organizational instances such as linking, transfer, patenting, business incubators and support structures for start-ups and spin-offs. However, this situation, which could be very reasonable for developed countries, is not enough for developing countries because this perspective is not considering that there is a business weakness to demand new knowledge from Small and Medium Size Companies (Caselet, 2010). As a result of this situation the present work proposes to boost Medium Size Companies (MSC) through a multidimensional model which considers two important variables to enhance them: absorptive capacity and open innovation. Both variables are studied as a source of competitive advantage and as an opportunity to make MSC capable of doing complex and sophisticated demands in terms of Science and Technology. And even though this situation could be considered far away and at a distance from South Arabia, it becomes important due to countries like Mexico are looking to entry in new markets, like South Arabia, one of the most important and innovative producers of Science and Technology.

KEYWORD: Open innovation, Commercialization, Technology

Introduction

The commercialization of scientific and technological developments in developing countries, despite having public policies aimed at their growth, has not yet

succeeded. The results of the Global Innovation Index 2017 indicate that countries like Argentina, Brazil, Cuba and Mexico have increased their capacity for innovation, especially in terms of the use of techniques in genomic products and genetically modified crops; however, this technology has lacked a commercial application.

This gap in the commercialization of science and technology is owing to the fact that public policies of developing countries are based on an unrealistic perspective (Espinoza and Stezano, 2015), since they only consider that the factor to constituting innovation is the transfer of knowledge based on the commercialization of research results through organizational instances such as linking, transfer, patenting, business incubators and support structures for start-ups and spin-offs.

However this perceptive is not considering that there is a business weakness to demand new knowledge (Caselet, 2010). Nowadays the connection between supply and demand of scientific and technological knowledge in Latin American countries is still very weak and is restricted to few actors in the Science and Technology system and Innovation, where Small Businesses are constantly forgotten and on the other hand they are the most important economic resources in countries like Mexico, where there are 96,121 Small Businesses, with a participation of 2 and 0.4 percent in the national economy (ENAPROCE, 2015)

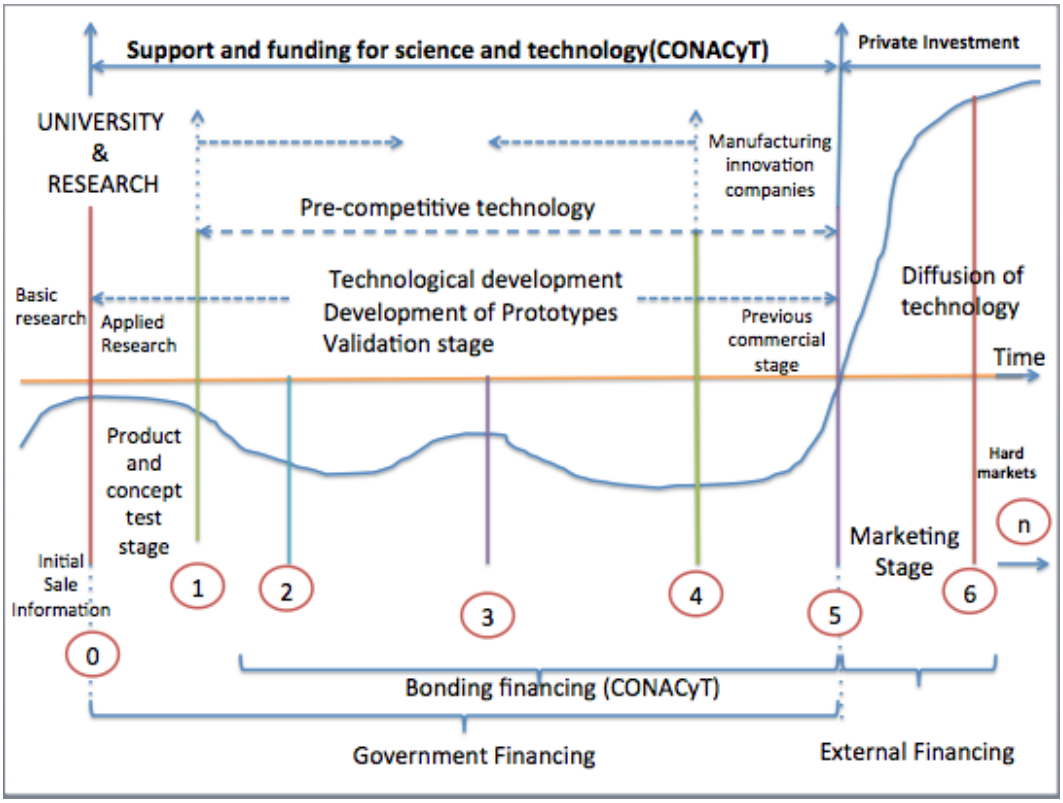

Figure 1. Conacyt 2017 (Funds Scheme).

An example of this situation is shown in the Conacyt (National Council for Science and Technology) 2017 Fund Scheme (Figure 1), which indicates that funds such as the Innovation Stimulus Program (or the Innovation Sector Fund (FINNOVA) are concentrated in a stage of development of prototypes and validation, which accounts for the lack of a strategic vision to boost the capabilities of the company to demand new knowledge.

Likewise, the results of the Survey on Innovation and Technological Development 2012 indicate that only 6.3 percent of the companies surveyed develop R & D projects with external actors; while the percentage of companies paying third parties their collaboration in R & D projects is less than 3 percent for universities and less than 2 percent for R & D cooperation institutes.

In this way, the challenge to follow in this proposal lies in how to strengthen the companies (SMEs) so that they are able to make demands more complex and sophisticated in terms of science and technology, detonating to a greater degree the linkage science-industry, while at the same time generating a competitive advantage.

To achieve this, the present work will address the concept of Open Innovation (IA) defined by Chesbrough (2006) as the increase in the use of internal and external knowledge to accelerate innovation at the internal level and the expansion of markets to outsource these innovations. In this sense Espinoza and Stezano (2015) states that the understanding of open innovation as a paradigm implies the acceptance that firms can and should use external and internal ideas to achieve advances in their technological systems.

And while it is true that AI as a concept has been widely analyzed, it could be said that its interpretation, characteristics and scope are still to be consolidated (San Martín Albizurri and Rodríguez-Castellanos, 2012), especially in relation to SMEs (Hossain, 2015).

Likewise, the concept of absorption capacity will be addressed; (Cohen and Levinthal cited in González-Campo and Hurtado, 2014, Zahra and George, 2002), understood as an organizational capacity that allows the company to identify its innovative potential through the recognition of external knowledge and later to transfer and exploit it (Flatten, Greve and Brettel, 2011). The relationship between the two concepts will allow the definition of the research question as a competitive advantage (Porter, 2004) for SMEs, in order to explain the justification, the general objective of the research, the theoretical basis and the methodology to achieve it.

1. State of the Art and Approach

Open innovation studies have risen significantly (Hossain, 2015) since the concept was introduced by Chesbrough (2006), who defines the term as the use of internal and external flows of knowledge to accelerate innovation and expand markets through of the external use of innovation. Recently, open innovation studies have been focused on large firms (van de Vrande et al., 2009; Bianchi et al., 2010). And the successful cases in open innovation have been represented by IBM, Philips and Procter & Gamble (Chesbrough, 2006).

At this point it is important to emphasize that despite the extensive literature on AI, there is still some ambiguity regarding some variants and complements about its definition, since depending on the perspective (internal or external) and meaning to which they associate the concept "open", establish diverse approaches that range from the possibility of taking advantage of external resources of the innovation to those that focus more in the internal context, defining the IA as the revelation, on the part of the knowledge organizations which they previously tended to hide. The concept is still in scrutiny, because it has been based on the relationship with technology (Carvalho and Sugano, 2016)

In the context of Medium and Small Enterprises, studies on open innovation (Hossain, 2015) have been mainly based on secondary, conceptual or managerial data. According to Rahman and Ramos (cited in Hossain, 2015), SMEs are less active than large firms in open innovation due to their organizational structure, culture and strategy. Also a study by the Organization for Economic Cooperation and Development found that the percentage of SMEs employ the perspective of open innovation is 5 to 20 percent. As follows, studies on open innovation in SMEs have been fragmented (Colombo et al., 2014).

However, some scholars argue that SMEs can achieve great benefits from open innovation compared to large firms, as there is less bureaucracy, a greater propensity to take risks and the ability to react quickly to changes (Parida et al., 2012).

Álvarez-Aros and Bernal-Torres (2017) point out the need on the part of companies in developing countries to strengthen their traits for effective open innovation.

Table 1. Main factors that favor Open Innovation in developing and developed countries.

Characteristics of open innovation with companies and characteristics according to their country.		**Developing country**	**Developed country**
Factor	Main expressions	_ _ _ _ _ _	XXXX
Strategy	Competitive innovation	_ _ _ _ _ _	XXXX
Organizational structures	Flexibility to change	_ _ _ _ _ _	XXXX
Competency profile	Mobility to change decisions	_ _ _ _ _ _	XXXX
Internal capacities	Institutional processes	_ _ _ _ _ _	XXXX

External capabilities	Interest in knowledge, trust and loyalty	_ _ _ _ _ _	XXXX
Licensing (Intellectual Property)	Intellectual property licensing agreements	XXXX	XXXX
Knowledge management	Identification, exchange and appropriation of knowledge	_ _ _ _ _ _	XXXX
	Capacities (transfer absorption)	XXXX	XXXX
Alliances and networks of collaboration of external and internal knowledge	Customer exploration, suppliers	XXXX	XXXX
	Exploitation of intermediaries, competitors, educational institutions, research centers	_ _ _ _ _ _	XXXX
Use of technologies and systems of technological innovation	Data, simulation, prototypes visual representation	_ _ _ _ _ _	XXXX
	Social networks, web	XXXX	XXXX
Technology tools, platforms	Insensitive to innovation and risk tolerance	_ _ _ _ _ _	XXXX
Organizational culture	Regulatory institutions	_ _ _ _ _ _	XXXX
Government policies	Regulatory framework	_ _ _ _ _ _	XXXX

At this point, the authors consider that one of the factors favoring open innovation in developing countries refers to absorption capacities (Table 1); concept, introduced by Cohen and Levinthal (mentioned in González-Campo and Ayala, 2014), refers to the company's ability to identify, assimilate and exploit knowledge of the external environment. According to the authors, the possibility of exploiting external knowledge is a critical component of innovative capabilities. And its premise is that the organization needs prior

knowledge to assimilate and use new knowledge.

However, Castro, Rocca and Ibarra (2009) point out that the ability to assimilate and the capacity to exploit knowledge for innovation require different competencies. In the first case, these are competences of "learning" (learning capacities) that allow to elaborate and fix new knowledge (assimilation); and in the second case they are problems solving that allow us to creatively find solutions to new or unforeseen problems (exploitation). These competencies are processes that demand different forms of learning that are available both internally and externally to the organization (Cohen and Levinthal, 1990, Zahra and George, 2002).

Likewise, the authors define that a critical point in the development of these capacities is the critical mass of qualified personnel. Second, the model assumes that the innovation process systematically interacts with the various forms of learning both internal and external to the organization, as can be seen in the learning spiral (Figure 2). Third, knowledge management is key to the learning spiral, since it integrates two simultaneous processes: knowledge coding (tacit-explicit / individual-collective) and the interaction between innovation and learning forms. Fourth, the products obtained are the result of problem solving and the concrete result of the overall innovation process.

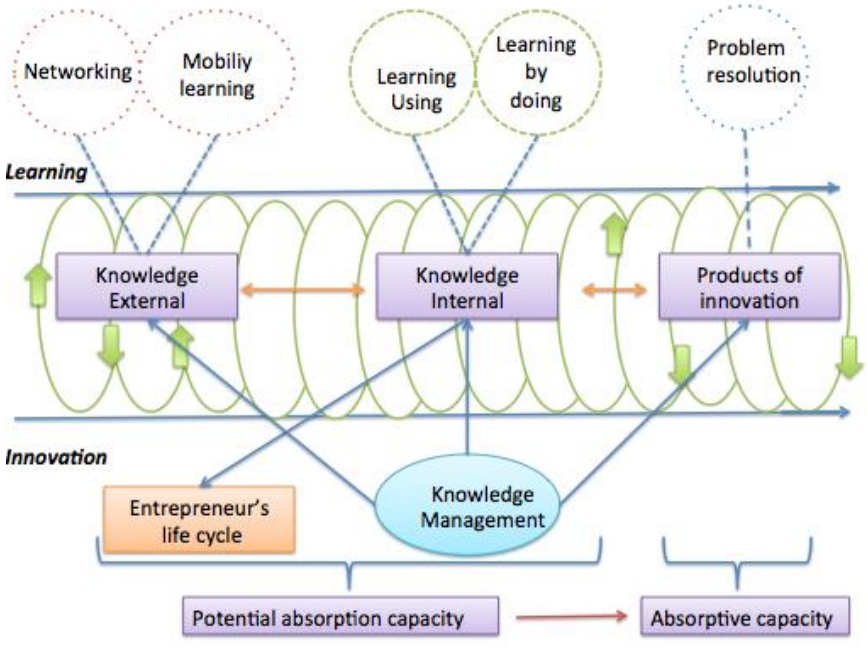

Figure 2. Knowledge spiral model (Nonaka and Takeuchi cited in Castro, Rocca and Ibarra, 2009)

Another definition of absorption is provided by Zarhra and George (2002), who establish it as a set of routines and strategic organizational processes that allow companies to acquire, assimilate, transform and exploit knowledge to create

a dynamic capacity for the organization. In turn, this capacity is divided into two parts: potential capacity, where knowledge is acquired and capacities are assimilated, and capacity realized, centered on the transformation and exploitation of knowledge.

Several studies consider that absorption capacity influences innovation. Jensen, Johnson, Lorenz and Lundvall (cited in González Campo and Hurtado, 2014) contrast two modes of innovation: the mode of science, technology and innovation, which is based on the production and use of codified scientific and technical knowledge; and the use of mode (DUI) based on informal learning processes. This contrast is based on the results of the DISKO survey, which shows Denmark's innovation system in comparative perspective. The authors determine that firms that combine the two modes are more likely to innovate in new products or services.

In this sense, the González-Campo and Hurtado (2014) research reports that in the case of the MIPMEs of Colombia, it has been detected that the type of business strategy has a greater relation between the innovation processes than the own capacity of absorption, which indicates that Zarhra and George (2002) consider absorption capacity as a set of routines and processes strategic organizations, because it is at this point that it is necessary to argue that the research problem of the present proposal is to inquire how the dimensions of the absorption capacity Cohen and Levinthal (cited in González-Campo and Hurtado, 2014) favor open innovation, which in turn generates a competitive advantage (Porter, 2004) to Small and Medium Enterprises.

For this reason, the following research question arises: to what extent does each of the three dimensions of absorption capacity: identification, assimilation and exploitation influence the establishment of open innovation in SMEs?

2. Justification

The entrepreneurial weakness to demand new knowledge (Caselet, 2010) affects the capacity of innovation of a country, such as Chile, Mexico and Brazil, economies that have not generated innovation achievements and there is no overcoming in innovation related to their level of development. The Global Innovation Index report (Cornell University, INSEAD & WIPO, 2017) mentions that we are still in the stage of knowing our level of innovation.

For this reason, the need arises to strengthen the companies (SMEs) to be able to make more complex and sophisticated demands in terms of science and technology, detonating to a greater degree the linkage science-industry, the level of innovation of companies, while giving them a competitive advantage.

In this sense, the literature shows that absorption capacity is a factor that stimulates open innovation (Alvarez-Aros and Bernal-Torres, 2017). Other studies focus on the relation between innovation and knowledge and on the forms of learning that interact in this relationship (Castro, Rocca and Ibarra, 2009). For this reason, one of the practical implications of this proposal lies in identifying the variables

that refer researchers in the areas of science and technology, as well as SME owners, regarding how the three dimensions defined by Cohen and Levinthal in González-Campo and Hurtado, 2014): identification, assimilation and exploitation. Once these indicators are identified, the degree to which each dimension influences, to a greater or lesser extent, the establishment of open innovation in SMEs will be defined through statistical analysis.

In this way, the impact that this study can have is to generate a proposal that allows companies to have a greater competitive advantage, which would result in greater profits and generation of workplaces.

3. General objective

To create a model that explains the influence of absorption capacities in the establishment of open innovation to constitute as a source of competitive advantage.

4. Outline of the theoretical basis

The dimensions proposed by Cohen and Levinthal (cited in González-Campo and Hurtado, 2014) will be explained separately to understand the theoretical foundations that will allow to identify the variables that refer researchers in the areas of science and technology, as well as the owners of Small and Medium Enterprises as indispensable. The study of González-Campo and Hurtado (2014) will be taken up to explain each of the dimensions.

Thus, identification or acquisition is the ability of the company to capture and appropriate the knowledge acquired from the outside (Todorova and Durisin cited in González-Campo and Hurtado, 2014). According to Zahra and George (cited in González-Campo and Hurtado, 2014), identification routines have three characteristics: the intensity and speed with which the company identifies and gathers information, and the direction to accumulate knowledge. In this phase, it highlights the importance of the relations that the company holds with other external agents, transmitters of knowledge. And in which informality generates more closeness and confidence (Casalet, 2010).

On the other hand, assimilation is the recognition of valuable knowledge outside the organization and relates to the routines and procedures that allow analyzing, process interpret and understand the information coming from external forces (Szulanski cited in González-Campo and Hurtado, 2014). At this point, the processes related to the organization's personnel are fundamental, considering that it is more feasible for a company to correctly assimilate knowledge if it has specialized and qualified personnel.

Finally, exploitation is the ability to use the acquired knowledge as a component that determines the innovation capacity of the company, which indicates applying the new knowledge and achieving the objectives that the organization has planned (Lane and Lubatkin cited in González-Campo and Hurtado, 2014).

In terms of open innovation, such as the use of internal and external flows of knowledge to accelerate innovation and expand markets through the external use of innovation (Chesbrough 2006). From the Alvarez-Aros and Bernal-Torres (2017)

approach, which propose a taxonomy of the main features that favor open innovation (Figure 3), it indicates the factors that favor Open Innovation in developing and developed countries.

In order to identify the Open Innovation Process, Grassman and Enkel (cited in San Martín Albisuri and Rodríguez-Castellanos) propose the first and most accepted model that divides IA activities into three categories: incoming, outgoing and mixed, establishing an advisory practice for each category (Figure 3):

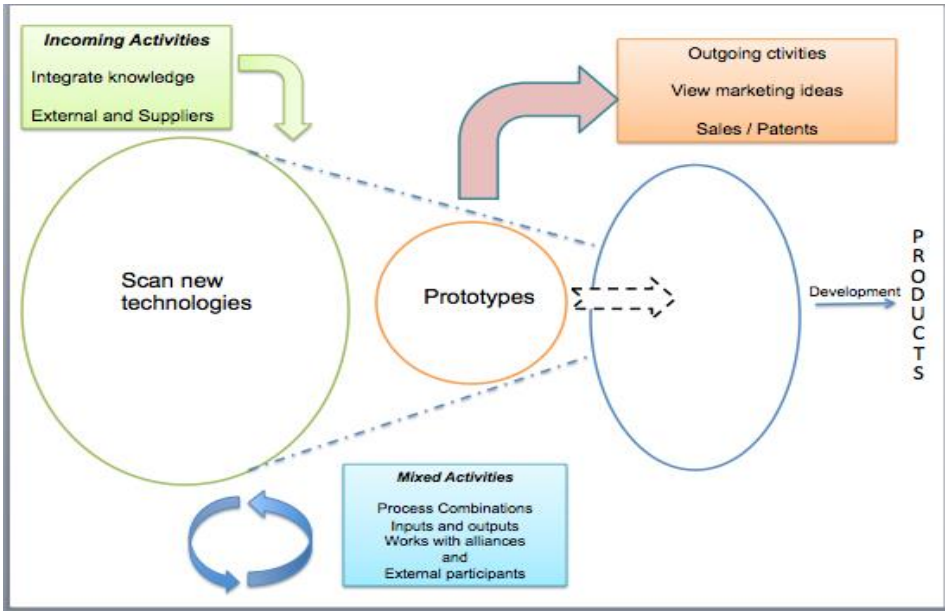

Figure 3. Activities of the open innovation process

Performing incoming activities means that a company decides to invest in cooperation with suppliers and clients and to integrate the acquired external knowledge. The companies that opt for this path of innovation are characterized by belonging to sectors of low technology, or that because of their small size or other circumstances rarely cover their knowledge needs using only the one developed internally.

Companies that focus on outgoing activities are intended to outsource the knowledge and technology developed internally, either by reducing their fixed R&D costs, by establishing themselves as a reference brand, or by setting their own products or services as market standards. In these cases, the benefits are obtained from the licenses and patents obtained by outsourcing the knowledge of the company (Ernst and Omland, 2003)

From identifying the activities of Open Innovation, these will contrast each of the parties with the dimensions of the absorption capacity.

5. Methodology

To meet the research objective, the methodology will be based on the proposal of Sampieri, Hernández Collado and Baptista (2016). Thus, the first step will be to conduct a descriptive study to identify the variables that researchers refer to in the areas of science and technology as well as the owners of Small and Medium-sized

Enterprises as necessary to develop the three dimensions of the absorption capacity of enterprises: identification, assimilation and exploitation (Cohen and Levinthal cited in González-Campo and Hurtado, 2014). Since the review of the literature, many researches have worked with variables related to the results of the effort made in innovation in the past. However, considering the concept of Cohen and Levinthal (cited in González-Campo and Hurtado, 2014), absorption capacity must be considered as a multidimensional construct, three variables are used to measure each of the three phases.

To measure open innovation, the three activities of the process will be considered: incoming activities, outgoing activities and mixed activities as the variables to be measured. This measurement will be made from a Liker scale of 1 to 5 (where 1 is never and 5 is always).

In order to relate the variables of the absorptive capacity to the open innovation, a correlational study will be applied to measure the extent to which each dimension influences the establishment of open innovation (Chesbrough, 2006) in SMEs. Likewise, it will be necessary to establish hypotheses from each relation, so it will be necessary to use inferential statistics to generate hypothesis tests.

6. Conclusions

The proposal illustrated in this work opens the opportunity to analyze and study new ways to strong Medium Size Companies in terms on absorption capacity and open innovation in order to provide a competitive advantage that might support developing countries to entry to new markets, like South Arabia, who are used to deal with complex scientific and technological knowledge into its business dynamics.

Also is important to establish that besides the multidimensional model proposed in this works, the role of strategy is also essential to considerate, because as Massimiano Bucchi (2017) has affirmed "Technology is not enough", due to the relations among resources sometimes goes beyond technology, innovation itself. As Michael Porter (2008), has pointed out strategy is a synonym of being unique, term that is necessary to entry to new markets, where differentiation is the factor that any industry is generating in its daily life.

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A Systems Analysis of Factors Impacting the Non-Holistic Learning of Arabic Language among Non-Native Speakers

Abstract

Acquiring fluency in a language entails reading, writing, speaking, listening and comprehension skills. An evident shortage in any particular domain leads to an unbalanced development, a skillset not quite qualified. This is where the Arabic Second Language Acquisition needs a systems dynamics approach. Unlike how a vast majority of languages are acquired, there has been a recurrent problem among heritage nonnative Arabic language learners. They are taught to read the language in a much higher percentage than to write or speak. As a result, a major segment of the non-native population can read easily, but not speak or understand what is being read. As astonishing as the problem is, there is an intuitive responsibility to understand the language. Yet, no methodology or model is in place to address the gap in this system. An attempt is made to understand the factors and gaps impacting the non-holistic learning of Arabic language using complexity theory and the use of retrodiction modeling is proposed.

Author Keywords :

Arabic Language; Dynamic Systems Theory; Complexity theory; Second Language Acquisition; Non-native speakers; Retrodiction model

Introduction

Arabic Language learning can be broadly classified into 3 branches.

1. Classical Arabic
2. Colloquial Arabic
3. MSA (Modern Standard Arabic)

Depending on the need and source of motivation, an Arabic Language learner choses one of the above categories to begin their Arabic Language Acquisition (ALA) journey. While classical Arabic is the traditional, pure form of unaltered Arabic, its' use and importance dates back to religious text. Colloquial Arabic is the slang form which differs from one native Arabic speaking country to another. MSA (Modern Standard Arabic) is derived mainly from Classical Arabic and is the popular medium of instruction for newspapers, magazines, journals, reports, television, radio channels etc. The question we wish to address in this paper is of the non-holistic acquisition of the Classical Arabic and MSA among non-natives. There is a growing trend within the Arabic language acquisition domain on providing resources and training to read the script with little to no emphasis on speaking, understanding or comprehending the given text. This trend is dominant among a rather large sector of the ALA group. According to the study published by Husseinali [2006][i], Arabic learners can be divided into 2 groups. The first one made up of those with Arab descent and non-Arabs, both having cultural and historical attachment and motivation to studying Arabic. The second group entails those with no such attachment. The aim of this study is to analyze the disparity in learning styles of the non-Arab with cultural and historical attachments hence we shall refer to them as the heritage non-native Arabic Language learners. Their language acquisition style and the system that has been in place that results in a recurrent output needs to be looked into and analyzed. Before we address the system, let us look into what language acquisition specifically involves and the kind of cognitive learning associated with it.

Arabic Second Language Acquisition

Second language acquisition (SLA) has been subject to different theories like the Dynamic Systems Theory (DST), Complexity theory,
Chaos Science and the likes[ii]. In fact, 6 alternate approaches to SLA have been popular. Mainly sociocultural, complexity theory, conversationanalytic, identity, language socialization, and sociocognitive. The area we are particularly drawn to in order to analyze our language acquisition problem is the complexity theory[iii].

When we talk of second language acquisition in reference to Arabic more specifically, there seems to be a growing need to understand the acquisition trends for this language. There isn't much literature found on this topic mainly because it isn't a very popularly taught language. There are gaps in the teaching and the research which need attention. Recently some work in integrating these areas has been highlighted by Alhawary [2009] in a book called Arabic SLA of Morphosyntax. It presents an analysis of ALA based on large research data and responds to the gap between research and

teaching. This gives us a starting point for understanding the Arabic SLA problems and the rising demand to address these gaps[iv] in order to develop a more efficient learning system.

Language Acquisition for Global English has been extensively studied, as compared to other languages. A quick literature review boasts of several theoretical as well as empirical studies for understanding language acquisition dynamics among its L2 learners. However, there is very little work to understand dynamics of languages such as Arabic, French, Spanish, or German. Another interesting phenomenon of Arabic Language Acquisition (ALA) is the manner in which its non-native learners approach the language in a compartmentalized manner. While some emphasis only the reading skills, others emphasis oral perfection while completely ignoring the meaning and vocabulary.

Ultimately, the language learning is not holistic. Would it be right to include this kind of learning under Language Acquisition at all? Apart from the individual's learning choice, there are several other sub systems affecting the learning of an individual, ranging from social, cultural, historical and cognitive. Thereby influencing and hindering their proficiency, making them incompetent and not quite fluent. On the other hand, what adds to the complexity is an increasingly complex yet structured study of the Arabic Language as a subject. Every aspect of the language is governed by rules and patterns making it rich and intricate.

Complexity in SLA[v] is reflected through the nature of learning in general. Language learning is dynamic and open, making them more complex than linear, the learning process is dependent on the environment as well as interactions among subunits. The behavior of language learning varies over a period of time with high and low motivation periods and learning abilities. This gives rise to another interesting concept within complexity called organized[ii] complexity. When a large number of variables are involved which interact with each other and change over time yet create salient outcomes, we have what is called organized complexity. Much like the way genes interact to make a genome. It challenges us to understand language and SLA from a dynamic systems point of view. In what way do components interact and come together to form a whole.

The interesting feature within Complexity Theory that can model our system of non-holistic language acquisition is the idea of Retrodiction. Complexity theory calls for Retrodiction[vi] instead of prediction, which is an interesting way of looking at a complex system. When looking into a language acquisition phenomenon, one can work from the outcome tracing back the reasons, interactions, motivations, socio-cultural reasons for various processes that make up the system. We need a framework like the above to better analyze the factors that lead to specific outcomes of complex non-linear systems.

Dynamic Systems for Arabic Language Acquisition

Dynamic Systems and in this case the use of complexity theory is our preferred

method of exploring the Arabic Language Acquisition (ALA) system among non-native Arabic speakers. While there are many other theories to choose from, complexity theory seems to hold a lot more potential in assessing systems whose salient outcomes are very specific and not broadly based. When we consider our ALA system, the increased probability of high reading ability and low comprehension among the heritage non-native speakers brings the system in question. While there are several reasons that motivate and direct this group of learners to acquire Arabic Language reading skills, some of the popular reasons are elaborated below.

a. Converse with people
b. Travel and tourism to Arab countries
c. Islamic heritage
d. Middle east politics

Getting data from the work conducted by Husseinali [2006][i] on Arabic Language learners enrolled in Arabic learning programs in Western Universities, we get an insight into the background of the learners and the motivation behind them enrolling into courses to pursue this language. It further helps us draw certain conclusions about the heritage non-native community. Looking into the popular reasons and contrasting them with the existing abilities of these learners, we see a sharp decline in the motivation and the ability. For example, conversing with people and traveling put great emphasis on speaking and oral communication, while following middle eastern politics would necessitate excellent listening and comprehension skills, yet reading skills are broadly popular and practiced. Which is to say that there are some gaps in this system which affect motivation, cognitive development and emotional attachment which need to be studied in view of acquiring Arabic as a second language.

Addressing the gap in the system

While motivation gets them to warm up to the language, the partial learning is still questionable. What factors have compelled several generations to get exposed to the language in such a way that prevents developing other areas of language fluency. These factors are not just limited to cultural backgrounds but have environmental influence as well. The following factors have reoccurred frequently among non-native speakers irrespective of location or gender.

a. Easier access to resources that can teach reading over writing, listening and speaking.
b. Fulfilling a religious obligation in the most convenient manner possible
c. Following a socio-cultural code of read and let read without questioning the reasons behind it
d. High cost associated with learning to become fluent
e. Lack of persistence and motivation

Apart from exploring and analyzing the above mentioned factors, complexity theory can further outline the interactions and processes within this system. While systems dynamics has seen some prior work in psycholinguistics, complexity theory to better understand psycholinguistics of learning Arabic

Language remains unknown. Not just the language acquisition dynamics but also the social and cognitive capabilities of the learners. The interaction with the environment and how that can accelerate learning or deter it. What are the factors that impact partial learning of the language? Can this be supported by complexity theory or DST at large? Systems Dynamics can find broad applications in Applied linguistics giving way to better theoretical models and pedagogical solutions. This can lead to better practices in designing curriculums, classroom pedagogy, teacher training and sustainable motivation solutions. The developmental paths that make up such a system among various environment yet lead to very similar outcomes is an interesting area to explore.

Also, further in this analysis is the concept of states. While we can agree that every dynamic system is made up of sub systems that interact with each other, these systems settle in specific states called attractor or repeller states.

Attractor states are those states that are preferable but unpredictable. While repeller states are those that are never preferred but are settled in by the system. When we see this from a ALA system, attractor state is the preferred fluency state that is preferred by most, but given the learning system in place not very likely. Making it a highly unpredictable state to be in. By far, most of the learners fall into a repeller state where the learning is partial, non-functional and rarely preferred.

Exploring the system

There are several ways in which we can address the non-holistic learning of the Arabic language system. However, given the complex nature of the variables and the different kinds of sub systems in place leading to similar outputs (i.e. learners can read the language only), it is best we apply the concept of complexity theory to explore the system and at the same time try to address the gaps in this language acquisition process. Furthermore, the following questions need to be researched upon in light of studying and establishing complexity theory for languages. The main areas of concern are firstly, the factors impacting the learning of Arabic Language among non-native heritage learners and the reasons for partial learning. Secondly, unlike most languages, Arabic Language is uniquely vast, complex and structured. Most verb patterns and grammar constructs are governed by rules. Thereby giving rise to an organized complexity. How does this affect the learning capabilities of individuals? Designing a framework for such a system will require combining the fields of applied linguistics and system dynamics. This calls for a new insight into the world of systems.

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Harnessing the power of mobile personal learning environments (mPLEs) in next-generation teacher education

Mar Camacho-Martí
University Rovira i Virgili, Spain

Prudencia Gutiérrez-Esteban
University of Extremadura, Spain

ABSTRACT

This paper explores the concept of mobile Personal Learning Environments (mPLEs) as a medium for developing teacher students' understanding of the new learning scenarios that emerge from the irruption of social media and as spaces for developing teaching ideas and learning approaches. Students explore the concept of mobile PLEs and deepen into its possibilities to develop creative ideas for their later use in teaching. This work reports pedagogical experiences with the use of PLEs within m-learning as learning scenarios in the context of an undergraduate course on Multimodal Literacy addressed to pre-service teachers. It argues that the use of PLEs in which students combine their everyday life devices with social media tools can greatly enrich the learners' experience and produce valuable learning outcomes that will become tremendously rewarding once they enter real practice.

Keywords: Mobile_learning, Teacher_education, mPLEs (Mobile_personal_learning_environments) ,

INTRODUCTION

It is universally acknowledged that traditionally Lifelong Learning training programmes are expected to facilitate training to workers in service, pre-services as initial training and unemployed people. However, this period of transition (from training to labour market) has been widely narrowed. What's more, with the current economic, social and financial crisis this problem seems to go in depth, thus training and its quality is in question since it is considered a priority in order to find a job. For this reason, it becomes clear that Educational Institutions are deeply concerned in training and evaluating skills and competences acquired, not only in formal but also in non-formal and informal settings, in order to promote and validate them (Gutiérrez & Mikiewicz, 2012). Indeed, despite the efforts of goverments and policy-makers for a planned unification of formal educational systems in some geographical areas, the fact is that profound cultural and social differences arising from the adaptation of digital technologies to our lives, challenge traditional educational models and a wider, more open learning and training scenario is called for.

Hence, educational systems seems to have become outdated in order to answer these needs , for this reason a media revolution in Education is gradually taking place. Within this new technological, economical, social and cultural scenario the development and improvement of Information and Communication Technologies (hereforth ICT) or Digital Technologies (hereforth DT) has led to the emergence of a new set of technologies used in distance learning, called Virtual Learning Environments accompanied by new online methods for virtual training (b-learning, e-learning, m-learning). These new models have complemented the oficial training from formal education (Mikropoulos & Natsis, 2011) with the tools and uses offered by Web 2.0, providing customisable and personalizable environments ("easy to use" and "easy to develop" Wild, Mödritscher and Sigurdarson 2008, p. 5). Some of these new growing scenarios become Personal Learning Environments (but also Personal Learning Networks, Institutional Personal Learning Environments, MashUp Learning Environments), Open Course Ware, Open Educational Resources, Social Networks, Massive Open Online Courses, Self-Organised Learning Environments (Mitra, 2012; Dolan et. al., 2013). In fact, the prediction for Higher Educational Technology concerning Digital Technologies is Open Educational Resources, Labour Issues, Adaptative Learning, Accreditation and Peer to Peer Learning (Watters, 2012) together with Wearable Technology, Adaptative Learning Technologies and The Internet of Things (Johnson et. al., 2015).

At the same time, pre-service teacher education programs in education institutions play a crucial role in preparing quality teachers who are open to use technologies, and are able to understand and accept the need for change (Bereiter & Scardamalia, 2006; Cheng, 2009). In a context of increasing digital literacy and rapidly growing availability of mobile devices, the integration of mobile learning in the curriculum of teacher education programs is inevitable. However, the integration of mobile technologies into teacher training does not merely mean an addition of tools, it changes everything about teaching and learning, and requires comprehensive and integrative planning of the ICT facade in teacher education (Wright, Dhanarajan & Reju, 2009).

Background

1. Mobile Learning: strategies and pedagogical skills

The omnipresence of mobile technology is absolutely changing the way we teach and learn. Mobility is understood as a great catalyst of change, and together with digital media offers learners the tools to develop knowledge, and the skills and social practices required to entirely participate in contemporary society. This continuously changing social landscape evidently affects the ways in which participation is assumed, and whereas young people hold the different practices of mediated social interaction, educators endeavor to discover ways to connect these expressions in order to stimulate learning.

The impact that Mobile Technologies have had upon the learners' lives has led them to become involved through a situation which permits them to participate in educational undertakings driven by personal needs and circumstances. This cultural shift towards a more learner-centered education also poses implications for the adoption of mobile technologies and directly challenges practitioners and researchers to provide appropriate answers. Texting, microblogging, video creation or mobile storytelling are instances of educational possibilities that mobile technologies offer, and evidence the value for including them into teaching and learning processes (McFarlane, Triggs and Yee, 2008, p.7) The quick production of mobile technologies offers new opportunities for exploring ways in which students own mobile devices may be included into teaching and learning processes in all educational levels.

When exploring Mobile Learning in educational contexts a recurrent issue is the facilitation of authentic learning experiences, which in turn, are leveraged by the spontaneous nature of learning in both formal and informal contexts. Despite the growing interest in explaining the huge potential of mobile technologies for pedagogical use, Mobile Learning appears to be a relatively under theorised topic in the context of Higher Education.

Regarding the expectations exerted upon 21st century learners and their learning profiles, there emerge from an educators' perspective a number of learner skills, attributes and competences, which need to be taken into account. Kukulska-Hulme (2010) addresses the change of key competences in the lifelong learning culture and lists how mobile technologies can be helpful to satisfy the calls for these new competences.The aim of many educators is to use new technologies in ways that will enable such competences and skills to be reinforced or to occur. Although there is a prevalent opinion that the school as a social institution still has central roles to accomplish, and that in the future it will still be the central building piece where to build educational groundings, there is also solid consciousness of the necessity to adapt its objectives, organization and functioning to the needs and requests of the knowledge society (Drucker, 1994; Kozma & Anderson, 2002).

The first Mobile learning studies come from 2000, when Sharples (2000) evidenced the potential of new designs in personal mobile technologies that could encourage lifelong learning programs and continuing educational prospects. At the same time, many tries have been made in order to describe mobile learning not only bearing in mind the devices, but also in relation to (i) the mobility of learners and learning and (ii) the learner's experience of learning with mobile devices. Different schools have endeavored to account for a definition of mobile learning, these definitions –evidently- have been influenced by technological progress and represent a continuously evolving mobile learning ecosystem. In 2004, Mike Sharples outlined mobile learning as "learning away from one's learning environment or learning involving the use of mobile devices". Traxler (2009) evidenced that the increasing development of communities of practice in m-learning was different from

the established communities of tethered e-learning, Glahn, et al. (2010) pointed out that mobile learning allows "both a high degree of personalisation as well as enabling a much more social method of learning.

Mobile learning advantages incorporate the use of mobile devices to accomplish any of the following achievements:

(i) catalyze the process and organization for teaching and learning on the go
(ii) foster instant communication and collaboration
(iii) conduct assessment and evaluation
(iv) provide access to knowledge

According to many studies, the benefit of mobile learning is given by the flexibility of mobile technologies, enabling personalized learning, promoting collaboration and encouraging autonomous, lifelong learning (Naismith et al., 2004; Dyson et al., 2008; Traxler, 2009). The growing potential of mobile learning for the enhancement of skills crucial for effective education (Litchfield, Nettleton & Taylor, 2008) and the need to embed mobile learning into conventional higher education processes have been highlighted by authors such as Traxler, 2005; Dyson, Raban, Litchfield & Lawrence, 2008. On the other hand, when mobile learning is based on social constructivism, it highlights the role of social collaboration for the co-construction of knowledge and meaning.

Following with Buchem and Camacho (2011), learners are encouraged to take control of their learning (by shaping learning goals and processes), to collaborate with peers to produce content (instead of consuming content delivered by instructors) and to use mobile tools for investigation and exploration (Loke et al., 2010). Teachers take an active role in being active facilitators in the design of the learning environment and structuring the learning processes (Jonassen, 1991).

Moreover, mobile learning can enhance student's critical, creative, collaborative engagement within the sites of application of knowledge. By challenging learners to engage collaboratively in the creation of content, it can also contribute to building networks of participants who are actively involved in creative activities, and reflecting on their own and others' practice. Mobile lessons can leverage the ability to gather information from a variety of interdisciplinary sources in a wide assortment of layouts while developing the value of location-based learning.

The variety of the research on mobile learning has made it arduous to produce a single definition or to determine benefits (Frohberg, Göth, & Schwabe, 2009; Sharples, Arnedillo-Sánchez, Milrad, & Vavoula, 2009). Definitions of mobile learning underline mobility (Sharples et al., 2009), access (Parsons & Ryu, 2006), immediacy (Kynäslahti, 2003), situativity (Cheon, Lee, Crooks, & Song, 2012), ubiquity (Kukulska-Hulme et al., 2009), convenience (Kynäslahti, 2003), and contextuality (Kearney, Schuck, Burden, & Aubusson, 2012). According to Sharples et al. (2009), mobile learning incorporates the features of mobility in physical, conceptual, and social spaces. The "relationship between the context of learning and context of being" is unique to mobile learning, as

learning may occur in independent, formal, or socialized contexts (Frohberg et al., 2009, p. 313).

To conclude, mobile learning facilitates ubiquitous access to information (Kukulska-Hulme et al., 2009; Seppälä & Alamäki, 2003), and suitability, practicality, and closeness are valuable to teachers and enhance students' learning (Kynäslahti, 2003). These qualities offer opportunities for individualized, situated, collaborative, and informal learning without being limited to classroom contexts (Cheon et al., 2012).

Whilst the majority of research on mobile learning has focused primarily on students, recently teachers and researchers have started investigating the potentials of mobile learning and devices in teacher education.

2. 21st Century learners in technology- rich environments: implications for education

There have been many attempts to define 21st century learners: millenials, new millenium learners, knownomads, digital natives, e-skilled citizens, e-citizens… but all in all, these efforts seems not to be enough in order to describe the uses, practices and values granted to the technology for young people all over the world (Cottica et. al., 2013). Although this generation uses ICT in many spheres of their lives, it could not be stated that they are digital competent citizens only because they have been born and grown up under the light of technology. In order for them to become real new millenium learners, they should master all the dimensions of digital learning competences (instrumental, cognitive-intellectual, socio-communicative, emotional and axiological) Area & Pessoa (2012), in cojunction with managing information to avoid infoxication and safety on the Internet (Online Safety, Digital Citizenship, Privacy, and Cyberbullying Prevention) (Gerstein, 2014). Strategies and lessons related to these topics should not be overlooked. They should be continually taught and reinforced for students of all ages, following some of the principles coming from the working models to integrate technology in teaching: SAMR Model (Puentedura, 2014), TPACK (Koehler and Mishra, 2008) and Maslow model (Gerstein, 2014) but customised to u-learning and Mobile Personal Learning Environment (hereforth, MPLE).

To sum up, a competency-based education and training model aims to describe the learning outcomes of the whole teaching-learning process in order to meet the labour market demands; this means that in the Knowledge Society competency-based training is nowadays a key issue not only in the workplace, but also in the educational field.

Historically knowledge was located in educational institutions but now it is much more distributed, everyplaced and not located. There is not even time either spaces restrictions because media allows you to learn what you want without agendas, timetables or deadlines. Here –in the access- relies the emergence of a new learning culture that breaks and challenges traditional

delivery methods for learning. In fact, there are many different new learning modalities: formal, informal, online, lifelong learning and the lately born: edupunk, edupop, incidental learning, ubiquitous learning, mobile learning, learning on the move… the key idea is that with the irruption of technologies and Internet in our lives, we learn *anytime, anywhere* (anytime & anywhere learning; EEL). Traditional teaching and learning patterns have shifted from a formal schooling paradigm, via ICT use in compulsory education (from 1:1 programmes to BYOD –Bring your own device-) to a Do-It-Yourself (DIY) one (Gutiérrez & Mikiewicz, 2012) in which learning can take place not only in schools, but also outside their walls. On this way, learning gradually becomes *invisible* (Cobo and Moravec, 2011) under these digital society scenarios in which young people use media and learn, often far away from their teachers, at the time that new training and learning pathways become necessary to meet the demands of different people, often, in different contexts. Formal and informal learning boundaries blur to give way to open, wider and more accessible learning spaces.

Thus the main challenge for Educational Institutions nowadays is facing what has been called a "new ecology of learning", that is to discover how young people use media and learn and how to fulfill these requirements (Aesaert et. al., 2015). Following some scholars' statements (Casquero et. al., 2010; Cobo and Moravec, 2011, Moravec, 2013), millenials acquire their knowledge through a process, moving from one place to another; gathering information from different sources, collecting data in their Personal Learning Environments. This acquisition is made through new training pathways and models of learning in which participate different people and provide situations that contribute to create a unique sphere where formal and informal learning are all put together.

These accesible and open learning spaces, in the web 2.0 environment, are characterized by the use of mobile devices that they use to communicate, play, entertain, enjoy, search information, edit and create files, that is generating and spreading information in different formats (mainly visual and graphic language overcoming textual) via synchronous tools (such as Whatsapp, Line) and their social networks (Twitter, Facebook frequently). This should be taken into account for the design and planning of curricula, wagering by disruptive innovation in education (Christensen, 2012), reversing the models, actions and roles expected by every agent of educational processes.

To sum up the *MPL ELearning* would incorporate the characteristics demanded for the 21st century teacher and the roles they are expected to play, according to Churches (2009): the adaptator, the comunicator, the learner, the visioner, the leader, the model, the colaborator and the risk taker. This means teachers should frequently do reflective thinking and practice, being tolerant, giving affection, love and

tenderness, love technology and digital information and show global awareness. Teachers must be understood as a guide, a guidance on the whole process, a network sherpa (Couros, 2013). In addition, there are some authors who talk about Guided Personal Learning Environments Model (using teacher-based guidance mechanisms into the online learning environments) (Shaikh & Khoja, 2015).

3. Mobile Personal Learning Environments: combining everyday life devices with learning needs.

In the context of initial teacher training, it is more than evident that preservice teachers also need to meet the needs of their future students and therefore, they need to understand different ways of teaching and learning. By working with preservice teachers there are many opportunities to engage in new pedagogies to influence practice. According to Med Kharbach (2012), the 21st century teacher should be digitally competent and able to fulfill from a rational and critical attitude, the following actions: creating and customizing their own teaching materials, sharing and using open educational resources, exploiting digital media (pictures, videos, infographics…), using social networks to be connected with other colleagues, curating contents for learning in the classroom, mastering task and time management tools, distributing online learning material, identifying kid-safe websites, designing and implementing evaluation tools, managing collaborative tools, taking advantage of videogames with a pedagogical aim (gamification), applying digital tools and sharing online files. Incidentally we must not forget what have been called the other 21st Century skills (Gerstein, 2013).

Teachers' attitudes towards uses of digital technologies as mobile devices are the key question when using in educational contexts, whenever they perceived it as productive and fesiable as stated Mueller et. al. (2008). Moreover other factors associated with the beliefs and perceptions teachers hold about ICT in education (Jimoyiannis & Komis, 2007; Kim et. al., 2013) but also with the need of creating communities of practice, networks (Sloep & Berlanga, 2011), collaboration among teachers in order to create a positive athmosphere for working in Schools, that is for learning but also for teaching. Meanwhile, the emotional factors have been already identified as a condition for a sucess *Digital Mediated Learning* (Cramp, 2015).

As described by Wang et al. (2009) some of the benefits offered by the use of mobile applications in training is its universality and versatility. Briefly, social networks as tools that allow the introduction to the construction and configuration of PLEs of university students. In connection with experiments conducted during initial teacher training, we have taken as a reference the work and postulates of Volman (2005), Erdogan and Sahin . Added to that, PLEs are articulated and

shapeless scenarios where confluence complex relationships among tools, tasks and contents, making possible the mutual growth and enrichment (Castañeda & Soto, 2010) and allowing to develop communities of practice and virtual learning communities. It is reasonable to think that they are fostered by formal/ informal learning, formal/ informal networks, known/unknown networks or networks connectors, "guided problem solving learning or motivated by personal interests, to participate in formal education programs" Coll, Bustos & Engel (2008, p. 314).

4. Empowering next-generation teachers through Mobile learning

Teacher training has been one of the least searched topics in mobile learning research (Ekanayake & Wishart, 2014). Mobile learning is particularly under-theorized in teacher education (Kearney & Maher, 2013), notwithstanding the necessity to apprise teachers of the value of mobile technologies and how to incorporate them successfully into their classes (Schuck, Aubusson, Kearney, & Burden, 2013). In their examination of mobile learning projects piloted in Europe, Kukulska-Hulme et al. (2009) exposed that at the "European and individual state level, there appears to be little teacher development or training activity addressing mobile learning" (p. 14). Challenges associated to teachers' adoption of mobile technologies have occurred from the fact that they are not efficiently prepared to investigate the gains or make informed decisions (Kukulska-Hulme et al., 2009; Schuck et al., 2013). Because of this, the need to provide teachers with effective technology integration skills and the rapid growth of mobile technologies as learning devices, teacher education programs need to apply theoretically and pedagogically sound mobile learning proposals (Newhouse et al., 2006).

Mobile technologies have the facility to add new scopes to teacher education. Mobile learning provides a unique opportunity for the enablement of observation, critique and sharing of activities in the classroom. There is a significant knowledge production and sharing capability allowed by mobile learning. The power of this kind of learning lies in its spontaneity and the teacher's ability to foster interesting learning situations.

There is a growing need for an array of different learning activities to support teachers at different stages of implementation, starting with those that concern the skills of all the stakeholders at early stages, shifting to posterior activities that rely upon broader learning skills. Factors contributing to success within this path include selecting suitable learning activities; supporting activities centering on important aspects of learning; allowing the development of activities focusing on social, metacognitive aspects of learning; gaining feedback about impact; providing pupils with opportunities to exercise increasing independence as to when and where to use devices inside and outside the classrooms…

Regarding the integration of mobile learning into student teacher education, the work of Baran (2014) provides a thorough

analysis of the literature concerning Mobile learning and student teachers education. According to his selection, there are main issues that provide different research contexts, and therefore, need to be further explored:

(i) Collaborative knowledge construction: Integration of mobile phones into early childhood literacy courses using QR codes (Husbye and Elsener (2013). Mobile devices' connection capabilities as providers of opportunities to share preservice teachers' products (e.g., teaching videos) on the web (Husbye & Elsener, 2013; Schuck et al., 2013). Use of a mobile mind map tool to co-regulate preservice teachers' collaborative knowledge construction, Järvelä et al. (2007) .

(ii) Changing pedagogies: the introduction of different models of Flipped classrooms in which students learn course content on the web via video, audio, or text and use class time to engage in activities and get individual guidance. In teacher education courses, mobile devices can help to establish flipped classrooms. Mobility, combined with other emerging features such as augmented reality and context awareness, helps to facilitate contextualized and situated learning experiences. Husbye and Elsener (2013) asked preservice teachers to access materials (e.g., video podcasts) before class and engage in hands-on activity during class. Another example shared by Husbye and Elsener (2013) are digital gallery walks, where students accessed web resources linked to QR codes on posters in class. Other examples include the use of Podcasting, (Schuck et al., 2013) … Following the participatory design approach, Price et al. (2014) designed the GeoSciTeach smartphone application to support preservice science teachers' awareness of the integration of geospatial ideas into science.

(iii) Timely communication afforded by mobile devices could convert a class conversation and increase students' engagement via backchannel conversations. Teacher educators integrate mobile devices into courses where preservice teachers share their understanding of content. Husbye and Elsener (2013), for example, used class-specific hashtags on Twitter, where students discussed class activities, commented on classroom experiences, and shared resources for best teaching practices. Similarly, Valtonen et al. (2011) used mobile devices in teacher education courses to enable students to capture and share lecture notes via social software, while Järvelä et al. (2007) used a mobile lecture interaction tool to enhance participation during lectures.

(iv) Content creation: Preservice teachers also engage with content on mobile devices. Digital narratives by capturing and editing videos, sharing them at a mobile phone film festival (Schuck et al., 2013) could constitute an example for this. Preservice teachers can make use of their mobile devices to organize their work and access reference tools (Franklin et al., 2007). Due to the potential for

improvement, researchers have explored the integration of mobile devices into student teaching practices. Preservice teachers connect via mobile tools to share feedback, Examples include microblogging (Schuck et al., 2013); virtual training (Seppälä & Alamäki, 2003); submitting school observation forms (Crippen & Brooks, 2000;); or designing lesson plans with mobile device integration (Foulger et al., 2013).

(v) Evaluation: mobile devices allow teachers to evaluate their own and their peers' learning. Chen (2010) developed a Mobile Assessment Participation System (MAPS) that aimed to facilitate the assessment of preservice. Mobile devices encouraged dialogues and communication between preservice teachers and practicum supervisors as well as teacher educators (Seppälä & Alamäki, 2003).

FUTURE RESEARCH DIRECTIONS

Universities and teacher training institutions need to give a proper answer to this new ecology of learning in the context of a digitally-based society, bearing in mind the way in which students learn, interchange and communicate each other. For doing that Digital transformation is required, covering the dimensions of digital competences aforementioned (Area & Pessoa, 2012), reaching the top stage of digital competence development and digital literacy of young and adult people by ICT understood as the third stage of embracing digital technologies (first is digital competence and second digital literacy), without being careless of make people learning to think critically, enable students to learn at their own schedule and pace, thanks to some initiatives as disruptive education (Christensen et. al., 2010) (e.g. the MITx's proposal: http://mitx.mit.edu/) by using for instance the flipped classroom (see http://www.flippedclassroom.com/).

Teacher training should definitely go for the use of mlearning as a catalyst for those shared experiences of collaborative learning, which allow self-regulation of individual learning and group (Mauri and Clarà, 2013; Cabero, 2013; Monereo and Badia, 2013) and the construction of these networks that shape and give meaning to the community of mobile learning. Another of the advances mlearning gives to teachers is the possibility of easy use, communication facilities and faster diffusion. It allows quick interchange and discussion among our Mobile Personal Learning Networks (MPLN) (e.g. in social networks or synchronous tools like Instant Messaging Services or Webconferencing systems) to describe the process followed until this dissemination of the product (from initial ideas to results: searching, selecting information, analyzing, processing, creating, editing, spreading… in all them are present e-skills above mentioned). This complement and reinforce other kind of relationships (real contact) that in many situations foster further collaboration among networks (PLN).

The potential of the MPLE is the possibility of harnessing the world in our hands, this new learning model is to easy as when a child are learning to walk and someone extend his/her hands for at any time or place

to help him/her. The social needs as a previous step to esteem needs, as stated Gerstein (2014). The social condition is necessary for doing that together with open educational resources and information, count with a general pattern of connectors (such as devices as apps) but on the basis of this learning is the ubiquitous, the feasibility for our lives, the faster and the adaptation to new changes, facilities, uses and purposes.

Regarding the assessment of informal learning, one of the potential strategies are to help people to identify their potential, what are the skills and knowledge acquired during their personal pathway training throughout programs like the Recognition of Prior Learning, the Prior Learning Assessment and Recognition (PLAR) (see http://www.priorlearning.ca/) or Prior Learning Assessment (see http://www.phoenix.edu/admissions/prior_learning_assessment.html) that contributes to identify their lifelong and life-wide learning in a competency-based system. Even there are scholars who already started to called the Personal Assessment Learning in reference to Personalized Learning and Blending Formal and Informal Learning (Jonhson, et. al., 2015), by through evaluating teachers' MPLE and MPLN as one of the challenges to overlap these days in initial teacher training.

All the afore mentioned strategies can be easily organised in the Mobile Personal Learning Environment (PLE), understood as a medium for developing teacher students' awareness of the new learning scenarios and potential that emerge from the irruption of social media as spaces for developing teaching ideas and learning approaches.

CONCLUSION

Although mobile technologies extend learning beyond traditional teacher-led classroom, it is hard to grasp the essence of Mobile Learning to show the way in which it contributes to the theory of educational practices. There is a clear need to provide new insights into emergent practices with mobile technologies that have implications for practitioners, researchers and educational stakeholders.

In the context of Mobile Learning in student teachers' education many pedagogical advantages of mobile learning include: connectivity and collaboration, flipped classroom models, mobility within the physical space of the classroom, backchannel conversations, engaging with content on mobile devices, mobile learning in student teaching, performance evaluation, and participation … Some key strategies need to be identified when considering developing teacher students' understanding of the new learning scenarios that emerge from the irruption of social media and as spaces for developing teaching ideas and learning approaches. The strategies that support this approach are the following:

1. A shared understanding of the theoretical framework that concerns teaching and learning with mobile technologies.
2. A shared understanding of the affordances of Mobile learning and the skills required from teachers

(methodological practices specially), providing new insights into new pedagogies that promote the shift from theory to practice.

3. Participation in authentic tasks that link formal and informal learning contexts.
4. Student teachers need to be aware on how to select learning activities.

Finally, research on mobile learning and teacher education technology has mostly investigated teachers learning about mobile technologies rather than learning with them. While a limited number of studies have looked at learning with mobile devices (Aubusson et al., 2009), more research is needed to understand how teachers and teacher educators' professional development can be supported with mobile learning. Additional research may also consider how the immersion of teacher educators networks or communities of practice help them engage in a professional conversation about the integration of mobile learning within teacher education contexts.

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An Action Plan for Activating and Improving the Role of the Teacher-Training and Quality Units in the Egyptian Public Schools: A Pilot Study

Authors
Shaimaa Awad, The American University in Cairo, Egypt

Gihan Osman, The American University in Cairo, Egypt

Background

In the global Education 2030 agenda, teachers are perceived as the main catalyst for change and educational reform for the essential role they play in the teaching and learning process; they are the ones responsible for guaranteeing quality education. Thus, working on developing those teachers' skills and competencies is something that should be given a great attention and importance. Teachers should be provided with adequate professional development and resources, be well remunerated and empowered to be intrinsically motivated to fulfil their mission as educators who raise up future generations and lifelong learners (Education 2030 Framework for Action, 2016). The same vision is mirrored by the Egyptian authorities when they emphasized in Article No. 22 in the Egyptian Constitution the role of teachers as the main pillars of education and that it is the state's responsibility to cater for developing their competencies and professional skills in order to reach a better quality of education (Ministry of Education, 2014). Accordingly, there are a lot of efforts exerted by the Egyptian government and the Egyptian Ministry of Education in the field of teacher training and teacher professional development among which is the establishment of the Professional Academy of Teachers (PAT) and the training and evaluation units in schools.

The Professional Academy of Teachers (PAT) was established by a Presidential Decree 129 in 2007 and began operating in 2008 (Building the Capacity of Faculties of Education: Case Studies of a TEMPUS Journey in Peer Learning and Transformations in Teacher Education, 2016). From the main roles of PAT is to support and assure quality continuous professional development of teachers (CPD), to accredit teachers to become trainers and to develop training packages that respond to the needs of teachers. In addition to this, recognizing the importance of providing effective training for in-service teachers and school staff that is based on building their competencies for a better teaching and learning outcomes, the Ministry of Education has set up training units in schools in accordance with Ministerial Decision No. 90 of 18/4/2001("وحدات التدريب والتقويم في المدارس", 2010).

In order to be accredited as a PAT trainer, the trainees have to attend a Training of Trainers (TOT) course, for 4 days/6 hours per day. The criteria for this is for the

teachers to have taught for at least 10 years. After this, the trainers have a portfolio and go through refresher courses to go through the ladder to different levels A, B and C (Building the Capacity of Faculties of Education: Case Studies of a TEMPUS Journey in Peer Learning and Transformations in Teacher Education, 2016).

The training material (curriculum) is also very important; in order to get the best out of any training, the training has to be designed on the school level taking into consideration the actual needs of the teachers. This would help engage teachers in the preparation process and encourage them to be eager to go through the training as it would include a personalized curriculum tailoring to their needs and abilities.

Theoretical Framework

Training and Quality Units in the Egyptian Schools

The training and quality units are available in each Egyptian school; this unit has a coordinator who cooperates with the MOE and who is monitored by PAT. It is this person's responsibility to identify the needs of their school teachers and to organize professional development trainings at any of the PAT branches. The principal of the school or one of the deputies should be supervising the unit. These units are responsible for planning and preparing the training programs for those working in the school, implementing the training, exchanging and developing the professional skills within the school community and monitoring the implementation of the training. The training and quality units are established to develop the competencies of the teachers and administrators in the school and help them acquire the 21st century skills like critical thinking, creativity, problem solving, integrating technology in education, research and self-learning that would enable them to become updated, innovative and creative in their teaching ; accordingly this would reflect on the student learning outcomes and help improve the quality of education within the school and accentuate the essential role of continuous professional development and school based reform. However, those training units have been facing several problems and obstacles that affected their actual progress and hindered the activation of their intended role (Building the Capacity of Faculties of Education: Case Studies of a TEMPUS Journey in Peer Learning and Transformations in Teacher Education, 2016).

Problems Identified in the Training and Quality Units

Some of those problems were due to bad management and planning, others were due to problems that occurred during the implementation process, and others were due to the resistance to the idea of teacher training and CPD.

Management, Planning and Implementation Problems

Some of the problems that affected the work of these training units are related to supervision and monitoring. It is supposed to be the responsibility of the principal to supervise those units on a full-time basis; however, this task is mostly assigned to a

deputy or a senior teacher who has a teaching schedule, which hinders him/her from taking full responsibility for the tasks and responsibilities of the unit. Accordingly, the principal's role is to only sign the records and the monthly report of the unit to be sent to the training department in the educational administration and to fill in the registration forms of weekly training meetings on paper and let the teachers sign for their attendance to avoid accountability. Unfortunately, the supervisors of those units are not recruited or chosen based upon their qualifications and merit, but based upon longevity in the profession which really affects the quality of work in the units. There are no real incentives neither financial nor spiritual for those working in those units especially the trainers themselves which eliminates their motivation to implement the programs (وحدات التدريب والتقويم في المدارس", 2010").

Training and quality units within schools lack the continuous evaluation and serious follow-up by specialists, which affects the efficiency and quality of performance and deprives them of feedback to evaluate their work; the mission of some officials from the administration or the directorates is to only ask for the latest report from the training unit to sign it without paying any consideration to the actual and practical effect of the training. Additionally, the fact that most of the public schools, work with two-period/shifts system, distracts the teaching staff and leads to the loss of responsibility for supervising the unit and reduces the chances of follow-up and evaluation. The absence of the principle of reward and punishment in the educational process does not allow for achieving equity between teachers who strive to improve and develop their skills and those who do not exert any effort (" وحدات التدريب والتقويم في المدارس", 2010).

Other problems are related to the planning for the training as some trainings do not have a pre-prepared training plan for the work; the training is randomly done and is not based on teachers' actual needs. There are also some financial and resources constraints that limit the work of such units. The shortage in the technological devices in schools such as computers and projectors affects the quality of the training (" وحدات التدريب والتقويم في المدارس", 2010).

There are also some factors that affect the implementation of the training like the workload and the busy schedules of the teachers that might prevent them from attending the training after the school day as they become exhausted. Lack of participation of the subject supervisors in the training workshops is another issue. This is in addition to the lack of well trained and qualified calibers to conduct the training. Some teachers believe that the training programs depend on routine and formal issues rather than interaction, communication and actual implementation; the training is construed as isolated experiences and do not have real impact on their teaching. Some teachers refuse to cooperate and to attend the training as they perceive it as a useless and is only conducted as a routine not as something they would benefit from (" وحدات التدريب والتقويم في المدارس", 2010).

Resistance to Change and Development Obstacles

Culture constitutes a major problem that hinders CPD in Egypt and accordingly the effective impact of the training units. Most of the teachers' resistance to CPD and training is related to cultural issues as they perceive it as a useless overload and a waste of time with no real benefit especially those who have a vast experience and are old in age (Building the Capacity of Faculties of Education: Case Studies of a TEMPUS Journey in Peer Learning and Transformations in Teacher Education, 2016). They believe that they have enough experience and do not need any further training. This culture is transmitted from a generation to another; the principals and the leaders in the schools are responsible for transmitting this negative picture on CPD. Other teachers feel embarrassed to ask for advice from more experienced colleagues. Thus, the deeply rooted cultural picture about CPD and the lack of awareness about its importance and essential impact on the teaching and learning process deeply affect the status of the training and quality units in schools (Building the Capacity of Faculties of Education: Case Studies of a TEMPUS Journey in Peer Learning and Transformations in Teacher Education, 2016).

Analysis

Looking at the previously mentioned problems and obstacles, it is clear that there are several areas that would need improvement in order to effectively benefit from the training and quality units in order to reach better learning outcomes. The improvement strategy will tackle issues related to developing and improving the action of the units in terms of choosing its head and trainers, developing the training program and content to be more practical and follow a competency based approach, set new criteria and qualifications of the supervisors and trainers for better management of the units and better implementation, and developing an evaluation system to guarantee better outcomes.

The Proposed Action Plan

The proposed plan will be in the form of a pilot plan to be implemented on a narrow scale. Using a micro-scale model can be useful for many reasons; first, when trying to implement any new reform or development experience, especially if it is related to an important issue such as teacher training, it should be tested on a limited scale first, in order to avoid the risk of success or failure after it is implemented on wider scale. On another level, to avoid economic problems if the reform failed. Therefore, planning and implementing the reform on a small scale and evaluating it first is the safest solution before generalizing the experiment. However, this piloting approach has some weaknesses also as it is possible that the sample chosen for the pilot process might not representative of the educational system in Egypt. The results in that case would be somewhat misleading, resulting in the possibility of canceling an experiment that might be successful if applied more broadly ("What is a Pilot Study? - Definition & Example - Video & Lesson Transcript | Study.com", n.d.).

Sample Size: 2 elementary public schools under the management of the same educational district *(Idara Ta'limia)*. This is to allow for exchanging the experiences between the 2 schools to test the training in 2 different settings.

Pre-planning Stage:

- Provide training for 4 qualified teachers; 2 from each school, who will be chosen after going through a competition and an assessment to measure their skills and capabilities, in addition to the principals in both schools.
- Constitute a committee that represents different stakeholders; 2 members from the PAT, 2 certified/ accredited trainers, the school principal and his/her deputy/ a senior teacher from each subject and a junior teacher from each subject. The role of this committee is to conduct a needs assessment and analysis of the current status of the training units and set the further steps for the action plan.
- The following steps/design for the strategic plan will follow the ADDIE model for instructional design (Forest, 2014) to guarantee following a systematic approach. According to the ADDIE model, there are five phases for the strategy as follows: analysis, design, development, implementation and evaluation.

I. <u>Analysis</u>

- This is one of the most important phases as it sets the first steps for the development of the strategy. At this phase the following points should be accomplished.

a) To conduct a needs assessment in the schools.
b) To conduct an orientation session where the committee introduces the aim behind the reform strategy and explain its importance.
c) To conduct a survey with the teachers in order to identify their needs.
d) To engage all stakeholders in an open discussion in order to identify the current problems the teachers are facing, the topics that they already know, the areas and topics they need to know more about throughout the training to avoid duplicating training topics.
e) To set new criteria for choosing the head of the units who does not have to be the principal, however, s/he should be chosen based on their qualifications and skills and not longevity in the profession. Provide him/her with a special training at PAT to enable them run the unit and monitor its progress. S/he should be provided with some vacant time to be able to fulfill the unit's mission.
f) To choose the target group who will undergo the training. Prepare a portfolio with their academic backgrounds, years of teaching experience, previous training and knowledge.
g) To review the current training material and compare it to the needs of the teachers and the results of the needs analysis.

h) To engage the beneficiaries/trainees in setting the desired goals and learning outcomes.
i) Working on a draft plan for the training and the expected timeline for implementation.
j) Discussing the limitations and expected challenges of the plan.

II) Design

In this phase, the committee should know how the training should look like in order to meet the previously identified needs during the analysis phase. The committee shall start working on the following points.

a) To review the objectives and learning outcomes.
b) To start working on organizing topics that will be included in the course content, means of delivery, types of activities and tools for measuring participants' progress.
c) The design of the content will follow the Universal Design Learning (UDL) approach ("CAST: About Universal Design for Learning", n.d.) to make sure to provide multiple means of representation, action and expression and engagement to appeal for the needs of all and every learner(s).
d) To start planning for the instructional strategy and the course structure and the methods that will be used.
e) To choose the course format, delivery methods and means of presentation (face to face /blended/ self-study).
f) The trainers will create a platform to upload the learning material.
g) To choose the means of assessment.
h) To write down the first draft course outline with all the details of how the course will be.
i) To review and agree on this final outline.

III) Development

- In this phase, the committee will agree upon the final details and create the course content, the course material, exercises and activities that will be used during instruction.

a) Develop the new training material after reviewing the existing training ones and updating it and according to the needs of each school.
b) A special room for the training should be prepared in order to be suitable for the application of the training activities and help the trainer to afford a good physical learning environment; which means to have enough space, round-tables to enable group work and discussion, etc…
c) According to the choice of the activities, the room needs to be equipped with the needed means such as whiteboard, computers and routers to access the internet.
d) Make sure that the course material aligns and leads to the learning objectives of the training.
e) The training material will be reviewed and accredited by PAT.
f) The in-house trainers from the school will be trained on how to effectively teach the new training material.

IV) Implementation

a) A course schedule will be set according to a previously conducted survey of the

best times for the trainees and the trainers.

b) Enough time should be provided for the trainers and the unit supervisor in order to be able to perform their jobs in an accurate and effective way.
c) The trainers will start delivering the training to the target group of teachers.
d) The trainers will measure learners' progress during the implementation phase in order to be able to meet each learner's need and redesign and adapt the program accordingly.
e) The training will include face-to-face meetings which will constitute some theoretical information, presentations and demonstrations where critical friends protocol will be followed to allow for more practice of what is being taught.
f) The trainers will pay visit to the trainees in their classroom to observe their actual teaching and implementation of what is being taught and provide them with constructive feedback.
g) Peer observation and peer coaching will also be part of the training in both schools.
h) Exchange visits will occur between the 2 schools in order to allow for benefiting from each other's' best practices.
i) The trainers of the 2 schools will create online forums for the learners from both schools to communicate and exchange experiences and concerns during the training and after, thus building learning communities.
j) Part of the training will include learners doing some self-study and research in order to develop their research skills and help them become "teacher as researchers" through learning how to conduct action research to solve different problems that they face in their teaching practices.
k) Mentorship and support should be provided from PAT representatives to trainers while implementing this pilot training.

V) Evaluation

a) As per the ADDIE model, evaluation should be an ongoing process throughout the training in order to allow for continuous development and improvement of the course.
b) Both formative and summative assessment techniques will be used.
c) As for the formative techniques, the trainer can use exit slips, oral feedback, observation, class participations, presentations and demonstrations.
d) As for the summative assessment techniques, reflective essays will be asked to be delivered all through the training as per the topics being taught and a final project or action research will be required at the end of the training where many of the course material and tools need to be used.
e) The committee and the trainers will analyze all the data from the previously mentioned resources and evaluate the effectiveness of the training accordingly.
f) Actions and decisions will be taken based on the findings.

Expected Outcomes and Challenges

Benefits	Risks
- Effective cooperation between PAT and the school. - Activating the role of training and quality units at schools. - Encouraging school-based reform following a bottom-up approach. - Building capacity inside the school through forming an in-house training team. - Designing a training program based on the findings of a needs assessment and actual needs of the teachers on the school level that would lower the resistance of some teachers to the idea of teacher training and CPD when they feel that it really meets their needs and expectations. - The choice of the head of the unit will be based upon qualifications and skills and not longevity which would help having an actual implementation of the training and thus overcome the transmission of the idea that the training is a routine useless process. - Using the ADDIE model would help developing a training program that is systematic and based on the actual needs on the school level, the continuous evaluation throughout the process would help improving the content and thus result in having a solid impact on the training quality. - Using the UDL approach would help in varying the means of delivering the content in order to meet the needs of all learners and also help in combining the theoretical with the practical and the actual implementation and thus it is no more an "isolated experience" from the teachers' actual teaching. - The whole process will provide teachers with a sense of self-worthiness and empowerment as they were engaged from the beginning from the analysis phase and their perspectives were taken into consideration.	- Resistance for change and development will continue to exist especially from the elderly teachers. - Some principals might object to the idea that they are not the heads of the units as used to happen by default. - The cost might be an issue especially that related to providing technological devices and equipment. - The limitations that this pilot study will focus on only 2 schools, which do not necessarily represent the needs of most of the Egyptian schools.

Timeline

- The duration of the project will be a year and a half (18 months) that will start June 2018 till January 2019.

Phase	6	7	8	9	10	11	12	1	2	3	4	5	6
Committee Constitution													
Analysis Phase													
Design Phase													
Development Phase													
Implementation Phase													
Evaluation Phase													

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Private Sector Contributions to Public Teachers' Professional Development Programs

Author:
Naglaa Fawzy

Co-author:

Gihan Osman, Graduate School of Education, American University in Cairo

Abstract

This study is about a change in the in-service teachers' professional development programs provided to public lower-elementary schoolteachers in Egypt that started in 2016. It describes the collaboration of the private sector, represented in a top-ranked private university and a private organization, and their collaboration to contribute to Egypt's Education Reform Plans. The case study research design is utilized to provide a detailed description of the joint project between both organizations. The study findings indicate that by joining forces, and with the approval and support of the Ministry of Education, both private organizations are bringing about a new approach to the field of public teachers training. The project supports the governments' efforts of change, and addresses the need of providing teacher-training programs of high quality that are fully funded. Accordingly, the private sector's contributions to Egypt's Education Reform Plans are of great significance and should no longer be marginalized.

Key Words: education reform; private sector; teacher training; professional development

Introduction

This study is about a change in the in-service teachers' professional development programs provided to public lower-elementary schoolteachers in Egypt that started in 2016. The case study describes the efforts of a top-ranked private university, located in Cairo, and that of a private organization known for its community services, and their collaboration to contribute to Egypt's Education Reform Plans. By joining forces, and with the approval and support of the Ministry of Education, both organizations are bringing about a new approach to the field of public teachers training programs.

General Context

Education and training is the seventh pillar in Egypt Vision 2030. The vision's strategic objectives conform to the fourth goal of the Sustainable Development Goals (SDGs) proposed by the United Nations aspiring to "Ensure inclusive and equitable

quality education and promote life-long learning opportunities for all" (Egypt Vision 2030, 2015, p.173). Thus, generally speaking, the plan sets out a vision to provide high quality education for all. There are binding legislations, and policies, and considerable efforts exerted by the government to achieve this goal. Focusing on the public elementary (basic) education, which is the area of study, the Constitution of 2014, Article [19], states that education is compulsory until the completion of secondary stage or its equivalent. Not less than 4% of the GDP for spending is allocated for the expenditure of State educational institutions, with an annual increase to reach global levels. Moreover, the system has witnessed several significant efforts of reform, since the beginning of the implementation of Egypt's Education Reform Strategy in 1990. The reform efforts have targeted many important issues like attempting to apply decentralization; improving teachers' status, conditions and effectiveness; and developing new curricula; effective management at the school level as well as at all administrative levels; and distant learning" (World Bank, 2002 ; UNESCO, 2006; Ministry of Education, 2007 & 2010; OECD, 2015; Egypt Vision 2030, 2015).

However, the fact remains that while Egypt has embarked on a comprehensive education reform program, the education system is heavily burdened in the course of achieving many of its reform goals (Egypt's Vision, 2030). Egypt's educational system is the largest in the Middle East and North Africa (MENA) region. The Ministry of Education is required to cover the expenses and supervise the work of 807,000 teachers, 47 thousand existing schools, and more than 450 thousand classrooms, with a capacity that exceeds 18 million students, with very limited resources and under dire economic conditions. As Hartmann (2008) states "An over-burdened and under-funded public education system fails to provide quality education to an ever growing number of students". Eventually, many public schools are facing the challenges of overcrowded classrooms, under-qualified teachers, and inadequate resources.

The Elementary Stage Challenges

Officials in Egypt have recognized the Elementary Education as a critical stage that should be given attention. Egypt Vision 2030 report (2015) indicates the stage's main issues, and three of which are directly related to the study at hand, which are:

- First, deficiency of training program for teachers.
- Second, professional inefficiency of some teachers.
- Third, diminishing role of civil society and the private sector in the educational process, including establishing schools and providing necessary resources, thus increasing the burden on the Ministry of Education for planning, and follow-up processes.

It is thus noted that the government is conscious of the important role that the public teachers and the private sector should play to help bring about education reform. Consequently, it has taken many steps, indicated below, to solve these issues.

Teachers as Agents of Change

The first and the second challenges mentioned above are related to teachers'

preparation, training, and professional development that are a key stone to educational improvement (OECD, 2015). Egypt Vision 2030 and the Strategic Plan for Pre-University Education 2014 – 2030 titled "Education National Project" reflect the fact that the government officials recognize that teachers are not only "variables that need to be changed in-order to improve (the) educational system, but they are also the most significant change agents" in the reform (Villegas-Reimers, E., & International Institute for Educational Planning, 2003). Officials share the international consensus that "teachers are a key enabling factor in improving the quality of education"(GMR, 2005, p.161) and that they are "the single most important influence on student achievement" (Ministry of Education n.d.; OECD. 2015). Egypt 2030 vision describes a whole program, titled "Develop Teachers' Professional and Technical Skills", that is responsible for the "development of professional and educational skills through setting evaluation and development systems responsible for qualifying and raising (teachers') efficiency (Egypt vision 2030, 2015).

The Quality of Teachers' Professional Development Programs

It is worthy of mentioning here that officials have embarked on several initiatives towards improving the quality and effectiveness of teachers, especially after the National Education Strategic Plan 2007-2012. Among the most visible outcomes of these initiatives have been institutionalized professional development and school-based reform by establishing a new cadre for educators, the National Authority for Quality Assurance and Accreditation in Education (NAQAAE) and the Professional Academy for Teachers (PAT) in 2007 and 2008, respectively. In-spite of these recognized efforts, still poor inadequate teaching persists (Ministry of Education, n.d; OECD. 2015). Teachers continue to teach through recitation and thus teaching remains "outmoded in terms of curriculum and pedagogy, unreconstructed in terms of encouraging more active learning, and uninformed by research and dissemination of good practice" (Ministry of Education, n.d.; OECD, 2015). This is seen as an impediment to the government's efforts in other areas to improve the quality of education (OECD, 2015).

One of the factors that led to the failing of the professional development of teachers is the quality of the professional development provided to pre-service and in-service teachers. The teacher training programs requires a radical change in content, integration of human development theories and psychology, methodology and pedagogy, and evaluation systems, to develop specialized and efficient teachers capable of increasing the value-added from education for students (OECD, 2015). Officials have admitted to this drawback and stated in the Education Strategic Plan that "teacher education generally, especially pre-service teacher education, will need to be sharpened up and reshaped" (Egypt vision 2030, 2015). The new programs should adopt the "new image" of professional development where teachers form communities of practices and contribute to their own as well as others'

growth (OECD, 2015). The curricula should be competency-based and have clear SMART outcomes (OECD, 2015). Activities should be hands-on and assignments should be a practical application of what is discussed and learnt in the program. Active learning, student-centered learning, and assessment should be highlighted and modeled (OECD, 2015). However, the design and execution of such a program is costly. It also requires a high level of expertise in the field of curriculum design as well as teaching and this is where the role of the private sector should come in.

The Private Sector Contribution to Education Reform

As for the third issue, which is the private sector's contributions to the reform efforts, Egypt 2030 Strategic Plan includes in its Elementary Education Program execution mechanism new policies" that encourage the private sector to finance the education sector and provide schools with suitable technologies and facilities necessary for enhancing educational performance" (Egypt Vision 2030, 2015). This facilitated the work of many NGOs like Misr El Kheir, EducateME, and Education First, and some organizations like Exxon Mobil Egypt, among others, which have carried out several educational projects that serve schools, teachers, and under-privileged students.

The Reform Efforts of the Graduate School of Education (GSE) of the American University in Cairo (AUC)

GSE of AUC is one of the few private universities in Egypt that supportes the governments' education reform plans. The school was initiated in 2005 and authorized by both the Supreme Council of Universities of Egypt and the AUC Board of Trustees in 2009 (Megahed, 2013). The Schools vision is to be "a model and disseminator of good educational practice and policy" for Egypt, and the whole region" as well as contribute to Egypt's Education Reform Movement (GSE, 2012). Among its beliefs is that education is a "powerful tool that can transform the whole community and improve its living conditions". Its main purpose is to develop quality teachers and leaders who are agents of change, capable of thinking critically, communicating effectively, working collaboratively and being creative and reflective (GSE, 2012). All the school's programs are fully accredited in Egypt (Megahed, 2013).

GSE Professional Educator Diploma (PED)

Among GSE various programs, The Professional Educator Diploma (PED) is the most popular and highly sought. The PED program has awarded over 3,800 certificates across different specializations that are currently limited to four main tracks: Leadership; Teaching Early Learners; Teaching Adolescent Learners; and STEAM Education. The size of the program has grown rapidly from 128

enrolled students in 2008 to a total of 881 enrollees in 2015 (GSE, 2012).

The program is known for its high quality. Besides being accredited, the diploma has clear outcomes that target building, practicing, and developing the 21st century skills. Its curricula have knowledge, performance, and disposition objectives that are aligned to teaching standards. The teaching methodology is student-centered and active. The assessment is aligned to the outcomes and has clear rubrics and grading scales. It is constantly reviewed and adjusted (GSE, 2012). According to the data gathered and reported by GSE, the diploma participants (surveyed and interviewed) have indicated the following points as good and unique practice (Megahed, 2013; McNally, 2016; NEWS@AUC, 2016):

- Integrating technology into learning
- Using reflective journals to develop reflective practitioners.
- Collaborating with colleagues – new relations and excellent opportunity to meet, share exchange ideas with teachers from different backgrounds; assignments are often group and pair work which is enriching
- Using non-traditional assessment methods;
- Having a Practicum course to apply what is learnt in the classroom
- Employing many innovative pedagogies and research approaches

GSE has exerted efforts, money, and time to make the diploma program available to the Ministry of Education educators (MoE). First, it sought the accreditation of the Supreme Council of Higher education in 2008. This step enables MoE educators to use the diploma as an official document for receiving professional development that can lead to promotions or opportunities to teach abroad. GSE also has offered scholarships to MoE educators and sought the consent and co-operation of the Ministry of Education in 2012, at a time when such a co-operation was not easily approved. Both parties signed a Memorandum of Understanding and the Ministry announced GSE's scholarship to MoE educators.

PED Main Issue

The only problem the MoE educators have faced when taking the PED was the language of instruction, which is English. This issue deprives many Ministry of Education educators (MoE) from the chance of joining the program. In an interview carried out by GSE, one of the school's enrolled participants has indicated his concern about the "professional development atmosphere in Egypt". He states that "Most highly qualified professional development programs are provided for those who can understand and do it in English thus depriving a great range of maybe talented teachers from participating" to participate in them (Megahed, 2013). Many MoE educators struggle with classroom participation and assignments due to their poor ability to communicate effectively in English (Megahed, 2013). Many participants suggested the idea of offering the PED in Arabic to enable qualified teachers who do not speak English to benefit from it.

Opportunities and Change Initiatives

The opportunity for change occurred in 2016 when The Egyptian Refining Company (ERC) has offered to award 30 annual scholarships to kindergarten and primary teachers working in the public schools of Greater Cairo Area of Mostorod, the company's surrounding community. Selected participants will partake in GSE's "Teaching Early Learners" (CELE) courses that are offered in Arabic.

The company, which is the change initiator, is one of "Qalaa Holdings" that is located in Greater Cairo Area. It stands out for its dedicated efforts to make a difference in the surrounding communities in which it operates: Mostorod, El Khesous, Shobra El Kheima, and El Mattareya (Qulaa, n.d). The choice of education as a platform and the design of ERC's strategic, culturally appropriate interventions are the result of the stakeholder mapping, and community needs assessment that the company has been carrying out since 2008. The results have indicated that Greater Cairo Area severely lacked educational opportunities and facilities (Qalaa, n.d.). Since then, promoting quality education has become a central pillar of ERC's social responsibility strategy. The company's belief as stated on the company's website is that "the task of building a prosperous Egypt is largely dependent on our ability to push through with educational reform and funding" (Qalaa, n.d.). It is thus rendered necessary, as indicated by the company's chairperson, to provide "access to new skills and educational experiences…at this particular stage in Egypt's development" (Qalaa, n.d.). In-fact ERC has stared implementing its plan since 2012. It has been active on all fronts of the educational spectrum with programs in place for school refurbishments, support, and scholarships to students, and teacher training and capacity building. It has to date impacted over 60,000 students and 1,000 teachers in its surrounding community. The teachers' initiative, which will be carried out in collaboration with GSE, is part of the company's overall new education reform initiative called "Mostakbaky", launched in 2016, to improve the quality of education in Greater Cairo Area (Qalaa Holding, n.d.). Having quality in mind and realizing the importance of the teachers' role, the company has opted for GSE's teacher professional development courses that are known,, as indicated above, for their quality and uniqueness. The project targets local kindergarten and primary school teachers and provides them with the opportunity to enroll in AUC's "Teaching Early Learners" (CELE) courses, which is also an MoE target, designed specifically for teaching young children.

This collaboration between the two private organizations has several advantages. First, the project addresses the three previously explained problems that the public elementary education is facing: lack of funding and resources; training of elementary public teachers and; providing quality professional development to teachers. Second, the project serves and coincides with ERC's strategic plan and community service efforts as well as with GSE's education reform efforts.

The Process to Introduce the Suggested Changes

There are several steps taken by ERC, the Ministry of Education (MoE) and GSE. The information below is taken from three reliable sources: a printed document provided by ERC to participants, the company's website, and the Ministry of Education printed announcements.

- In 2016, an Agreement of Co-operation for teachers' support is signed between ERC and GSE
- In the same year, MoE approves the second phase of "Mostakbaky" project and decides on the number of participants from the three concerned areas according to needs: 9 participants from Shoubra El Kheima, 10 participants from El Khesous, and 9 participants from El Matarreya
- MoE announces the Teacher Scholarships to the Greater Cairo Area of Mostorod public elementary schools
- An application form that indicates the requirements to join the program is designed and distributed
- Eighty applicants are interviewed and 30 chosen according to requirements and criteria of selection; teachers are selected based on their ability to demonstrate a passion for learning, a general willingness to transfer knowledge to other members of their community, and a previous record of community and school service participation.

The Structure of the Program

- The program is an intensive one-year program that focuses on achieving a qualitative improvement of skills by exposing teachers to the latest techniques in "early-years education".
- In both content and design, the Arabic program follows the original PED English programin design and content
- The content of the program address child development & learning theory; teaching methodology; assessment of young learners; school community and parent/teacher communication; and technology and media for young learners.
- The content is taught over six modules, each consisting of 12 sessions, held twice a week, with each session lasting 3 hours. The sessions are held every Friday and Saturday as per the participants' requests (week-ends).
- Participants are graded in each module according to their participation, assignments completed, and final module project. A final letter grade is given to participants at the end of each module
- Participants are awarded a certificate of professional development in teaching early years upon successful completion of all modules.
- As announced by ERC, the company plans to work closely in partnership with the Ministry of Education to assess and evaluate the impact of the new professional development program on teachers' performance.

Program Implementation Procedures

- 3 highly qualified PED instructors who are bilingual and can teach and translate

the PED-CELE are appointed to provide the program in Arabic
- Participants attend modules as planned (mentioned above)
- All participants have passed the three modules successfully.

Current state of the implementation

The participants have completed three of the program's five modules, and the program is still in progress. They have two more modules to carry out.

Outcomes

In the light of the available evidence, observations, and participants' interviews, it is noted that:

- **Participants recognize the high quality of the modules in terms of content and instruction**. Interviewed participants stated that the coursework has changed the way they approached teaching. There is a consensus about three broad areas of development in which participants feel the program has the greatest impact: practical methods to active learning and student centered teaching; new assessment strategies and techniques; new skills that are mainly collaboration, communication, reflection, and critical thinking. Second, when compared to the ministry programs that the participants attended in the Professional Academy for Teachers (PAT), GSE modules are of a much higher quality. Participants have mentioned the following points to describe the differences noted between both training programs:
  - The activities of the modules are engaging and the in-put or lecturing time is limited while most of the PAT trainings are teacher centered and has a lot of input and fewer activities,
  - In the modules, there is a focus on reflection which is a skill that is rarely employed or developed in MoE professional development programs
  - Opportunities for sharing experiences in the modules are regular and more intense than in the PAT trainings; participants exchange ideas through planned discussions and group work activities and projects
  - Participants get to express their point of view without experiencing fear or aggressive opposition. They feel that the learning environment created is safe and conducive to learning. In the PAT trainings there are other considerations that prevent participants from being open and honest
  - Some participants have pointed to the fact that coursework is graded in the modules and that they have to work to earn their grade and move to the following module, which is not the case in most of the trainings provided by MoE as they are granted the certificates as long as they have attended the training.
- **Participants are starting to develop the 21st century skills.** By examining the participants' assignments and coursework, it is evident that they have started to **learn how to be reflective and critical thinkers**. The assignments and projects that they are asked to carry out urge them to be analytical and creative. It is easy to trace the

development of their critical thinking and reflection skills by comparing their first assignments to the last ones.

- By observing the group's dynamics, it is noted that the participants have realized the importance and benefits of **collaboration**. Before joining the program, the teachers of the three areas of Greater Cairo Area of Mostorod, were "competing rather than collaborating", as mentioned by some of the interviewed participants. During the program, new relations and friendships have developed among them. The program has brought the teachers together and facilitated their collaboration as they worked on joint projects. The coursework requires them to depict problems peculiar to their schools and formulate strategies and plans to resolve them. Participants have worked together with great enthusiasm and dedication and designed impressive and **creative** plans and strategies of high quality.
- Teachers report that the program is a source of **positive energy** that gives them constant hope for change and development. One of the participant states, "we started to believe again in the possibility of change".

Program Drawbacks

- The program's format leads to **diluting material**. Although participants have asked to have the sessions on weekends, they have indicated that they feel exhausted and overloaded. Classes meet face to face every Friday and Saturday. By mid-course, participants become less enthusiastic and start to express their desire to take a break. In-spite of that, they have rejected the option of holding the sessions during the week, in the evenings, or after the working day, as their family-circumstances would not allow it, especially that most of the participants are women. Instructors respond to this issue by assigning the minimal workload possible. One of the instructors believes that this adjustment, though necessary, affects the quality of the participants' overall experience. "Every assignment counts! Diluting the module's material, whether readings or assignments, negatively affects the learning experience".
- Instructors are not given access to **participants' profiles**; their qualifications; years of experience; responsibilities and tasks assigned; interests; preferred learning styles, among others. Being provided with this background information, prior to the beginning of the modules, could have resulted in increased engagement, less resistance and prompt intervention. The information could have helped instructors anticipate potential problems and be pro-active to them. It could have also supported instructors in personalizing learning promptly and thus limiting problems of disengagement and demotivation.
- The program lacks an e-learning platform and a **learning management system** (LMS). From the instructors' point of view, the lack of an educational platform where instructors can upload readings, resources, and materials, has caused difficulties in managing the course. It also decreases

communication and limits the possibility of extending learning outside classrooms.

- The instructor of the third module believes that using a learning platform is needed not only for organizational and communication matters, but to break the MoE educators' fear of using technology. The instructor, who resorted to "Edmodo" as a substitute for "Blackboard", has personally witnessed the participants' lack of technology skills, their frustration when they are asked to use it, and even resistance to employ it. "**Technology literacy** is not a luxury but an urgent need in the 21st century educational field", states the instructor. She believes that all teachers should learn how to employ technology to improve the quality of learning and achieve personalization.
- Some participants vary in their evaluation of the quality of the modules offered based on the variation of instructors. Participants appreciate the effort done by the three instructors. However, some of them have indicated that one of the modules is more theoretical than the other two and the instructional methods used are less interactive. By examining the original English PED module content, outcomes, and instructional methods, it is evident that the problem lies in the instructor's approach to content and employed pedagogy; the original PED-CELE module is highly interactive and has many performance outcomes. Therefore, the way the module is being applied is different from what is designed.

Analysis

By analyzing the findings, it is concluded that:

- The program is of a high quality and is evidently achieving its objectives. Participants are changing their teaching, learning and thinking styles. They are also starting to form a professional learning community whose members stand on common grounds and work closely together to resolve issues that are peculiar to their context in creative and innovative ways.
- There are flaws in the program's planning and management. First, not considering the possible negative effects of the condensed sessions, and the program's tight period, and its format, which are not difficult to anticipate in the program's early planning stages, has resulted in diluting the program's material and assignments and having exhausted participants. Second, planning to provide an alternative for Blackboard, which is GSE's official education learning platform (LMS), is over-regarded. GSE has known that Blackboard access to this group cannot be provided. Therefore, integrating technology into the participants' learning has not been integral to the planning phase although it is a community need and a program goal. This has led to lack of communication, and disorganization in the modules' materials and resources. In addition, breaking the participants' fear of using technology, and enabling them to experience its great potentials in extending and personalizing learning, as designed and intended in

the original PED, have not been achieved. Fourth, there are obvious defects in the program's management. Instructors are not given access to the participants' profiles, which slowed their pace in addressing demotivation and providing personalized learning. Finally, although the original PED has assessment and evaluation policies in place, they are not applied in the Arabic program. The lack of accountability and feedback to instructors resulted in instructional inconsistencies.

Recommendations

The program needs a strategic intervention plan in place to develop and sustain its quality and effectiveness. The following procedures are therefore proposed:

- **Assigning a Project Management Committee**: GSE and ERC need to organize the management of the program. The team should have clearly assigned tasks that are related to the monitoring, assessment, and evaluation of the program. The team will link and facilitate communication among all stockholders.

- **Changing the Program's Format to Blended**: This procedure is important to overcome some of the reported issues related to scheduling sessions and meetings. It also implies assigning a e-learning platform and an LMS. Participants get the opportunity to learn at their own pace, whenever and wherever convenient. It is also a needed procedure to break the participants' fear of using technology or "the computer" as participants usually refers to it. Discussion threads, blogs, wikis, audio threads are all tools that can be utilized by instructors to expand learning and personalize it, therefore engaging more students and providing them with quality learning. The platform will also help instructors and participants organize learning materials and resources.

- **Planning, Designing, and Developing a Capacity Building Program For Instructors:** Induction & monitoring training should be provided to instructors to decrease discrepancies in instruction.

Lessons learned

Although the program is still in progress, some main issues and lessons can be mentioned in this part:

- Harnessing the support of private institutes and donors and coordinating their efforts can facilitate the achievement of the government's huge agenda for education and training reform
- Seeking the support and cooperation of national experts who are working in private Universities, like GSE, leads to the improvement of the quality of teacher professional development programs
- Continuous monitoring, assessment, and evaluation is required to achieve quality.
- The absence of accountability creates negative outcomes like instructional inconsistency.

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THE IMPACT OF INFORMATION AND COMMUNICATIONS TECHNOLOGY ON HISTORY LEARNERS' ACADEMIC PERFORMANCE IN SCHOOLS

Sandile T. Shabangu

ABSTRACT

The focus of this study was to explore the impact of Information and Communications Technology (ICT) on History learners' academic performance in schools. A Pretest-Posttest Experimental Research Design was used for this study. The study was guided by four research questions and two null hypotheses tested at 0.05 level of significance. The sample for the study was made up of two intact classes made up of 68 Form 4 History students from two private schools in the Hhohho region of Swaziland, which was divided into control and experimental groups. Data was collected using two 9 Item Essay Type Tests, captioned, "Test on Impact of ICT on History Students (TIOIHS 1and 2)." The tests were validated by three experts from the University of Swaziland and a high school History teacher. The tests have a test–retest reliability value of 0.84. The two groups were pre tested to ascertain level of performance before treatment. The experimental group was taught using slides and used iPad tablets loaded with e-books combined with the Internet while the control group was taught conventionally to investigate the effects of the treatment on the experimental group. The two groups were then post-tested to determine the difference in their performance after treatment. The SPSS version 20 software was used to analyse the scores from the two tests. The t-test was used to test the hypotheses at 0.05 level of significance. The results showed that the pretest mean of the two groups were not significantly different while the posttest mean showed a significant difference in favor of the experimental group. The study concluded that the use of ICT improved students' academic performance in History. It recommended that the Government of Swaziland should enact a policy to enforce the use of ICT in the teaching of all subjects at Secondary Schools in general and History in particular.

Keywords: Impact, Information and Communications Technology, History, Integration, Performance.

shabangusandile001@gmail.com

Background

In recent times, there has been intense advocacy, both nationally and internationally, for the application of Information and Communications Technology (ICT) in the teaching and learning process. A number of studies (McMahon, (2009); Cooke, (2010); Arinze, Okonkwo and Iwunor, (2012) support the claim that technology has great potential in providing new kinds of instructional opportunities and enhances the knowledge and learning experiences of both the teachers and students (Newhouse, 2012). Within a short time, ICT has become one of the basic building blocks of a modern society. According to Amedzo (2007) the world has reached a stage where a person without basic computer knowledge finds it almost impossible to function properly in society. The emergence of ICT has revolutionized the existence and activities of man especially in the milieu of globalization. UNESCO (2009) states that the demand for higher education cannot be met in the developed and developing world without distance or virtual modes of learning which is facilitated by ICT. Many countries now regard understanding ICT and mastering its basic concepts as part of the core of education.

Teaching is becoming one of the most challenging professions in our society today where knowledge is expanding so rapidly and modern technologies demand the use of Information and Communication Technology (ICT). According to Haydn (2010) Education Policy Documents in many countries have placed emphasis on promoting the use of ICT in teaching and learning, often in conjunction with curriculum reform initiatives that aim to enhance the development of 21st century skills such as collaborative inquiry and collaboration. In Swaziland, the Government has established a fully-fledged ICT Ministry since 2009 to stress the importance of ICT in promoting economic growth and development. The government of Swaziland has acknowledged the significant role which ICT can play as the country moves towards a knowledge-based society as stipulated in the Swaziland Education and Training Sector Policy (2011). Moreover, one of the objectives stipulated in the policy is to integrate Information and Communication Technology (ICT) in both Primary and Secondary schools.

Teachers of History have to be innovative by introducing new methods and resources into teaching the subject. Field (2003) admits that History, like every national curriculum subject, has clear requirements to use technology, however, history teachers feel it is a burden to make use of ICT. It is unfortunate that some History teachers still resort to the old and dogmatic ways of teaching the subject without new technological innovations. As such students are performing badly in the subject, and gradually, History is losing its place in the Swaziland's Educational System (Examination Council Report, 2015).

When looking at the current widespread diffusion and use of ICT in modern societies, especially by the young digital generation, it should be clear that ICT will affect the complete learning process of today and in the future (Haydn, 2010). Students nowadays have been described as the new millennium students. They use ICT

in a more creative and innovative way at home than at school for different purposes. They collaborate and communicate using ICT gadgets more effectively. Most children enter school knowing how to use ICTs. Integrating ICT in schools will provide a more advanced way of teaching as children nowadays have a lot of interest in it. The advantage of ICT is that in most cases, printed books limit teachers to using the same information repeatedly over the years.

ICT tools have vast resources of information which can be accessed at any time and which can be upgraded from time to time. Karchmer (2001) argues that when readers engage in print-based text, they are confined to what is written on the paper in front of them. He suggests that, electronic texts eliminate such boundaries and provide readers and writers with the opportunity to easily connect to relevant material. The idea is that students will be active participants rather than spectators in the teaching and learning process. It is against this backdrop that this study is focusing on the impact of ICT on History learners' academic performance in schools. Since most learners have a keen interest in technology, it is believed that History Learners can benefit a lot from using ICT to improve their academic performance.

Statement of the Problem

Students' learning remains central in any academic achievement debate. ICT provide a window of opportunity for educational institutions such as schools to harness and use technology to complement and support the teaching and learning process. However, despite the enormous advocacy of ICT aided teaching and learning, investment and donation of ICT equipment to schools, teachers, including History teachers, are still reluctant to fully integrate ICT into the teaching learning process. The learners' continuous poor performance in history in the Swaziland General Certificate Of secondary Education (SGCSE) is cause of worry to all education stakeholders. The researchers believe the use of ICT will increase students' participatory level thus leading to increased performance. Hence the need to examine the effect of ICT on students' performance in History.

Research Questions

The following research questions were answered by the study:

1. What is the performance pattern of the control and experimental group learners in the pre-test before treatment?

2. What is the performance pattern of the control and experimental group learners in the post-test after treatment?

3. Is there any difference in the mean performance of the control and experimental group in the pre-test and post-test?

Hypotheses

The following hypotheses were formulated for this study:

1. There is no significant difference in the mean score performance of both control and experimental groups in the pre-test.
2. There is no significant difference in the mean score performance of both control and experimental groups in the post-test.

Methodology

A pretest – posttest quasi-experimental research design was used. The study was carried out in two randomly selected private schools located in the urban area of the Hhohho region. One class each of Form 4 history students and their teachers were chosen for the study. One was a control group (N=34) and the other an experimental group (N=34). The instruments for the study were two 9 item essay type history tests titled "Test on Impact of ICT on history students (TIOIHS 1 and 2*)".* The tests were face and content validated by three experts (Measurement & Evaluation, History Lecturer and History Teacher). The tests were pilot tested and a reliability value of 0.84 was calculated using test – retest reliability. Both groups were pretested to ascertain level of performance before treatment and were post tested to ascertain if there was a difference in performance after treatment. The two groups were taught by their class teachers to avoid researcher bias.

Treatment

The control group received the conventional face to face classroom instruction using the prescribed history book in all the sessions without any further intervention. A set of pre-test questions were given to the group of participants both in control and treatment groups. The intervention for the experimental group was the use of slides and iPad tablets combined with the Internet which is provided by the school to solicit information on the same topic. The iPads were loaded with e-books through the school server.

Students were engaged in 4 sessions of 70 minutes per lesson where they were given sub-topics to research on about the League of Nations. They were given websites covering the topic through Google Scholar and a Website (www.activehistory.co.uk). The sub-topics varied in every session, and were designed to suit their interests as well as being relevant to the topic. The teacher first taught the topic using PowerPoint then warm up activities were given to students. Students were assigned to search for topics about the League of Nations from the Internet. They were asked to do the search on Google Scholar.

Thereafter, students were asked to form groups of 5 and create PowerPoint presentations .They were given guiding questions based on the topic. Students were asked to do the following while searching for the information: identify the sources of history relevant to the topic, extract information on the League of Nations from several sources on the web, assess the resources and make conclusions based on existing evidence, identify relationships, trends and design changes they encounter, use their knowledge of history to describe specific changes in the historical context, divide the sources into several parts and find the relation between the source and then support their argument with information found on the internet.

In the next lesson, students were asked to use the word processor to create a Table and to list in the Table the positive and negative points of the League of Nations that they could find from the Internet. Thereafter, they used the formatting tools of the word

processor to identify those points which were supported by evidence in the historical source or from their own knowledge, and those points which they believed to be unreliable.

Finally, the pupils were asked to use the work they had done in analysing the historical source to support their arguments in a discussion about whether or not the League of Nations was a success or failure. It was felt that using word processors to study the source made the process of historical analysis much more efficient, as pupils were able to easily highlight, manipulate and categorise the text. They were then able to use their analysis to prepare their PowerPoint Presentations. After the completion of the session treatment, a post-test was given to the learners. The tests were marked by the teachers and scores recorded.

A software package called Statistical Package for Social Sciences (SPSS) package version 20 was used to analyze the scores from the two tests. Students were classified according to grades to determine the patterns of performance during the pre and post-test. The mean was used to determine the difference in performance of the control and experimental groups during the pre and post-test. An independent t-test was used at 0.05 level of significance to determine if there is a significant difference between the control and experimental group scores in both the pre and posttests.

Results

Research Question 1: What is the performance pattern of the control and experimental group learners in the pre-test before treatment?

Table 1 presents the performance pattern of the control and experimental group learners in the pre-test. The table shows that in both groups, the pattern of performance is almost similar with most students scoring more than 60%.

Table 1

Pretest scores of both Control and experimental groups

Marks Range (%)	Control		Experimental	
	Frequency	Percentage %	Frequency	Percentage %
Below 50	4	11.8	1	2.9
51- 60	11	32.4	7	20.6
61- 70	9	26.5	15	44.1
71-80	9	26.5	9	26.5
81-90	1	2.9	1	2.9
91-100	0	0	1	2.9
Total	34	100	34	100

Similarly, Figure1below was used to show a visual presentation of the performance pattern of the control and experimental group learners in the pre-test. The Figure shows that in both groups, the pattern of performance is similar. So the two groups could be said to be at the same level of performance before treatment.

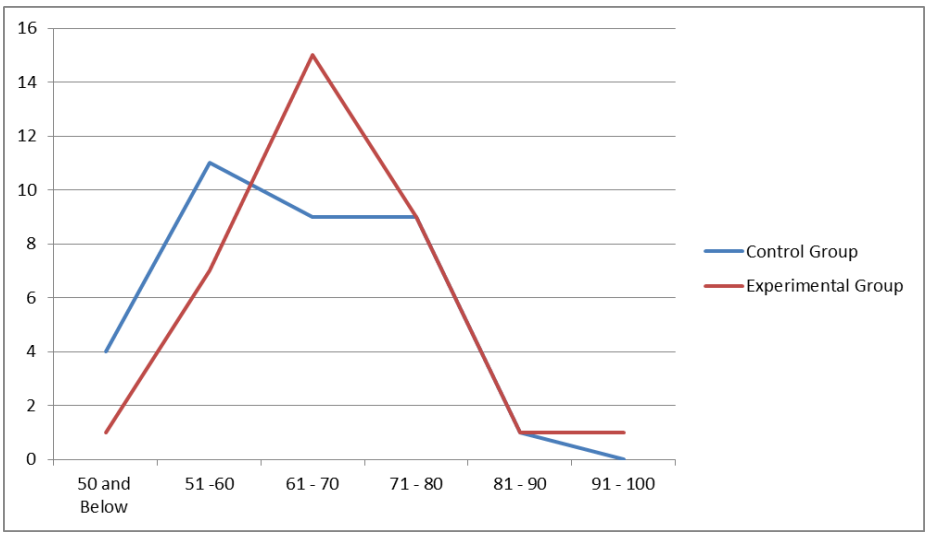

Figure 1. The performance of control and experimental groups during pre-test

Research question 2: What is the performance pattern of the control and experimental group learners in the post-test after treatment?

Table 2 below presents the performance pattern of the control and experimental group learners in the post-test. The Table shows that the treatment group has more students (85%) scoring marks above 70% yet in the control groups a majority of students scored less than 70% .The results indicate that the experimental group performed better than the control group during the post-test.

Table 2

Post-test scores of both Control and Experimental groups

Marks Range %	Control		Experimental	
	Frequency	Percentage %	Frequency	Percentage %
Below 50	1	2.9	0	0
51- 60	7	20.6	0	0
61- 70	13	38.2	2	5.9
71-80	11	32.4	6	17.6
81-90	1	2.9	12	35.3
91-100	1	2.9	14	41.2
Total	34	100	34	100

Similarly, Figure 2 below was used to show a visual presentation of the performance pattern of the control and experimental group learners in the post-test. Figure 2 shows that the experimental group outperformed the control group as most students in the experimental group (85%) scored marks above 70 % yet in the control groups a majority of students scored less than 70% . This indicates that the use of ICT in History improved the students' performance.

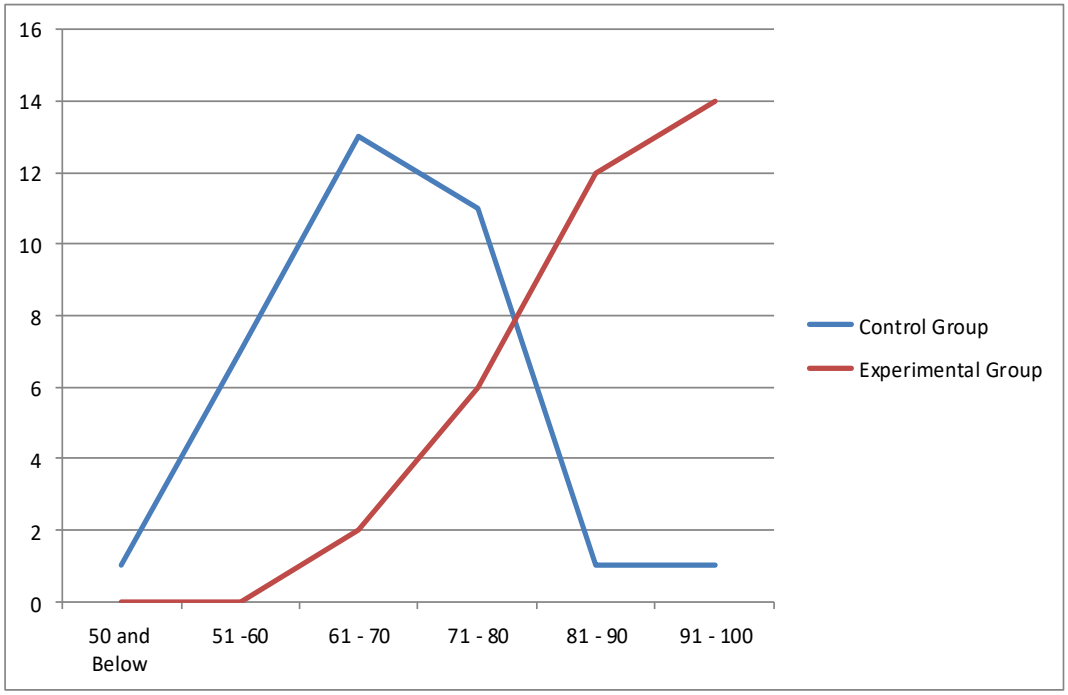

Figure 2. Post-test performance of the control and experimental group

Research question 3: Is there any difference in the mean performance of the control and experimental group in the pre-test and post-test?

Table 3 below presents the mean performance of the control and experimental group in the pre-test. The Table depicts that the experimental group has a slightly higher total score (S=2400) that the control group (S=2215). Thus the experimental group has a slightly higher mean score (M=69.29) than the control group a mean of (M=65.15). Therefore, it can be noted that the differences between the mean performance of the control and experimental group in the pre-test is small (4.14).

Table 3

Mean scores of both Control and experimental groups in the Pre-test

Variables	Control Group (N= 34)	Experimental Group (N=34)
	Pre-test	Pre-test
Total Sores	2215	2400
Group Mean	65.15	69.29

	Pre-test	Pre-test
Total Sores	2356	2923
Group Mean	70.58	85.97

Table 4 below shows that the mean score difference between the experimental and control group is 15.39 which is higher than the pre-test mean score difference of 4.14. Thus, the experimental group performed better than the control group in the post-test.

Table 4

Mean scores of both Control and experimental groups in the Post-test

Variables	Control Group (N= 34)	Experimental Group (N=34)

Hypotheses Testing

Ho1: There is no significant difference in the mean score performance of both control and experimental groups in the pre-test.

Table 5

Statistical comparison between the pre-test performance of both the control and experimental groups (N=68).

Items	$\bar{x}$	sd	df	t_{calc}	t_{tab}
Control Group	65.15	10.16	65	-1.79	2.00
Experimental Group	69.29	8.94			

$p \leq .05$

$t_{calc} < t_{tab.}$ Ho is accepted: that there is no significant difference in the mean score performance of both experimental and control groups in the pre-test.

Table 5 shows that there was no statistically significant difference between the pre-test performance of both the control and experimental groups, because the calculated t = - 1.79 is lower than the calcualated t = 2.00.

Ho2: There is no significant difference in the mean score performance of both control and experimental groups in the post-test.

Table 6

Statistical comparison between the post-test performance of both the control and experimental groups (N=68)

Items	$\bar{x}$	sd	df	t_{calc}	t_{tab}
Control Group	70.58	9.84	64.9	-6.083	2.00
Experimental Group	85.97	10.98	65.2		

$p \leq .05$

$t_{calc} > t_{tab}$ - Ho is rejected, thus there is a significant difference in the mean scores of both groups in the posttest.

Table 6 reveals that there was a statistically significant difference between the post-test performance of both the control and experimental groups (t_{calc} = -6.083, being higher than the t_{tab} = 2.00) implies that the results were statistically significant. This suggests that use of ICT tools play a significantly positive role in students' academic performance.

Discussion

Findings from this study established that the the experimental group performed significantly better than the control group in the posttest. These findings are in consonance with the findings of Arzal (2013) who conducted a study on the impact of ICT on a group of university students' academic performance in an Indonesian English as a Foreign Language (EFL) classroom. These findings are supported by a study conducted by Cooke (2010) who conducted a study in the USA on students' performance when using ICT. Findings of the study were that students' performance increased with an integration of ICT. The study also indicated that the impact on learning will increase over time as teachers and students become more experienced in continued practice on using computers.

This is in line with the study findings of Kulik's (2014) meta-analysis study which revealed that, on average, students who used ICT-based instruction scored higher than students without computers. Empirical studies as mentioned in the previous section, revealed a positive relationship between the use of technology and academic achievement. Students who are exposed to ICT tend to perform better than those that are not. This is consistent with a study conducted by Boadu, et al. (2014) who carried out a study on an examination of the use of technology in the teaching of History in selected Senior High Schools in the Cape Coast metropolis, Ghana. Students were also found to portray positive attitudes in class when technology is used in teaching and they further performed better than when not using it.

The results of this study concurs with that of Saeidi and Ahmadi (2016) who carried out a study on the effects of watching videos in pre-reading on EFL learners' reading comprehension and attitudes in Iran.

Conclusion

From the findings of the study, it can be concluded that the integration of ICT into the teaching learning process will improve the performance of learners in History.

Recommendations for action

It is therefore recommended that the government of Swaziland should enact a policy to enforce the use of ICT in the teaching of all subjects at secondary schools in general and history in particular. On the other hand, the government and schools should put in place the necessary ICT infrastructures in schools and teachers and students to acquire the necessary ICT competence and skills. Curriculum developers should plan and design appropriate textbooks with an integration of ICT. The In-Service Department should visit schools and present lessons so that teachers can be assisted in integrating ICT in their lessons.

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Promoting Inclusive Quality Education through improvement of training curriculum of "Contract- teachers" in Morocco

Author
Gabriel El Khili,

(UNESCO, Morocco)

D. Enas Abulibdeh

College of Education, Humanities and Social Sciences
Al Ain University for Science and Technology (UAE)

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Abstract

In 1990 at Jomtien, the global education community met and committed itself to providing every child in the world with a chance to education. This event paved the way to the 2000 "Dakar Framework for Action, Education for All: Meeting our Collective Commitments"[1]; that reaffirmed the early vision of the 'World Declaration on Education for All' and highlighted the necessity of all children having access to school services, and enjoying their right to quality education. In Incheon/South Korea, the international education community through the 'Incheon Declaration and Education 2030 Framework for Action', also confirmed that teachers and educators will be well-trained, qualified, and supported within effectively governed systems.

Later in September 2015, the international community convened in New York to endorse the Sustainable Development Goals (SDGs) for the next 15 years, with the

1 http://unesdoc.unesco.org/images/0012/001211/121147e.pdf

fourth Goal aiming to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all". Many policies across the world have been designed and put in practice, encouraging and promoting access to compulsory schooling and free education. This resulted in the enrollment of millions of children in primary education, especially in developing countries including Morocco. These countries quickly faced several issues related to quality education, mainly massive recruitment of teachers and training.

***The goals of this paper** are to review the existing contract-teacher training program in Morocco in order to enhance the quality of the teacher training content and methodologies, and to highlight the importance of using smart, personalized and inclusive approaches in reaching quality inclusive education through empowerment of teachers. The main targeted group of this study is the contract-teachers recruited to fill the gap of teacher shortage in Morocco. This research paper is based on relevant theoretical concepts and approaches rooted in key concepts such as inclusive quality education, inclusive curriculum and smart learning ; highlighting the importance of curriculum improvement strategy as a means of changing "paradigm" of quality teaching and learning in Morocco. This study adopted both qualitative and quantitative approaches using material revision, desk review, and semi-structured online interviews with some Ministry of Education (MoE) and educational staff.*

Keywords: Teacher Professional Development, Inclusive Quality Education, Innovative Inclusive Curriculum, Competence-based approach, Smart learning.

Introduction

Since its independence in 1956, Morocco has achieved tremendous tangible results in assuring the right to education for all (94% in 2008)[2]. In 1999 the country developed a very ambitious vision and launched a series of ambitious educational reforms, namely the "***National Charter for Education and Training***[3]", The National Education Emergency Program, as well as the "Strategic vision of the 2015-2030 reform of the Moroccan education system". These reforms aimed at aligning with the new curriculum and teacher reform global movement, mainly in terms of introducing new educational concepts and trends, particularly the competence-based approach, the learner-centered approach, and the new curricula concepts and innovation.

As far as curriculum issues are concerned, the *National Charter for Education and Training* has introduced some crucial recommendations, mainly in terms of decentralization and education service delivery mechanisms. The new vision provided the Regional Academies for Education and Training in each of the 16 administrative regions of Morocco with the possibility to cater for education services for their respective regions. The

[2] http://unesdoc.unesco.org/images/0018/001897/189743f.pdf, p.33.

[3] "Charte Nationale de l'éducation et de la formation" adoptedin 1999

implementation of the National Charter for Education and Training has also resulted in renewing curricula and textbook assessment and evaluation, and it has also encouraged contextualization of response to the local needs and realities. Furthermore, the regional Academies were also invited to - take more space in developing up to 30 percent of the curriculum for their respective regions to help ensure that the curricula are locally relevant.

In addition, the National Directorate of Curricula in Morocco is also tasked with the responsibility to develop the core curriculum, to establish pedagogical standards, and to adopt textbooks according to the guidelines and specifications established by the ministry of education. These policy guidelines are applied as a frame of reference in teacher training and the development of teaching materials.

Despite the fact that Morocco is among the countries hugely investing in education (4.6 billion USD in year 2015[4]); the paradigm shift and positive results in quality education are still to be proven.

An analysis by the UNESCO Institute for Statistics (UIS) in 2014 showed that at global level, 27.3 million primary school teachers are needed to be recruited by 2030[5]. The situation is alarming in Morocco as well due to several factors, namely, demographics decline, enrolment trends, and the number of children dropping out of school. Further, the country is facing serious challenges in term of teacher retirement and lack of qualified teachers. In fact, the deficit of teachers in Morocco is getting worse every year . In view of the tremendous investment in provision of access[6] to education services, the number of pupils increased by 3.3% to 6.95 million during the school year 2016-2017.On the other hand, the number of teachers in Morocco declined by 5 to 6% to 210,367 against 222,736 a year earlier. This situation of decline concerns both primary (-5.6%) and Elementary (-) (التعليم الإعدادي %5.7) as well as Secondary (التعليم الثانوي) (-5.2%)[7].

Analysis Framework of Contract-based Model

In order to address this situation, the country has planned for massive recruitment and training of new teachers within 2030, and has launched a recent recruitment process based on contract-based model. In fact, Morocco is facing a combined challenge where the country is facing teacher deficit and unqualified (in service) teachers, mainly in terms of :

- Teaching and learning policies.
- Teacher training and professional development curriculum and material.
- Teaching pedagogical practices and methods used by the majority of Moroccan teachers seem to be unable to meet the current new needs and expectations of students.
- The use of information and communication technologies (ICT) in

4 http://telquel.ma/2015/10/21/gouvernementropose-baisser-budget-leducation-nationale_1467214

5 http://unesdoc.unesco.org/images/0023/002327/232721E.pdf,p.2.

6 Access mean here, the possibility to be provided with the opportunity to go to school (primary)

7 http://www.men.gov.ma/Documents/Indicateurs2014fr.pdf

learning and teaching could be considered as limited. The concept of smart learning environment is far from being a daily reality.

Nearly 24,000 contract teachers will be recruited, distributed across the various regional education and training academies. The candidates who are eligible to take part in the competition should be Moroccan nationals, non-civil servants, practice all their civil rights, and have clean criminal record. Applicants must have a bachelor's degree in education or an equivalent degree and must have theoretical and academic qualifications similar to those in the recommended courses.

Prior to signing a two-year contract with the regional academy, those who pass the competition will undergo a qualifying training program. At the end of these two years, if the recruited teacher passes a professional qualification examination, his / her contract will be renewed for one school year, renewable on a yearly basis. With regards to the legal status of the contract-teachers, this model will be governed by a decree (Dahir) Number 1.58.008 of 24 February 1958. From a legal point of view, the first issue to highlight here is that recruited teachers under this category are not considered as "teachers", but rather experts and agents. On the other hand, the government decree number 2.15.770 of August 9, 2016, did not clarify the matters related to recruitment procedures, nor professional development and training of future teachers. This legal tool does not mention any possibility of changing status in the future for such category.

However, as long as the contract-teacher is in the educational system, he/she will enjoy all the advantages set by the MoE to an officially recruited teacher. Once the contract is signed, the recruited teacher receives a salary equivalent to that received by a second grade teacher (scale 10), receives family allowance and area/region hardship allowance if any.
Most importantly, the contract also stipulates that the contract-teacher will benefit from training sessions organized by the Department of National Education, which is structured as follows:

- "Distance learning" will enable the teachers to strengthen their skills in the teaching profession in a relatively autonomous way to avoid travel constraints
- Training is also provided at aschool level (classroom), with support from coach teachers and educational inspectors in the department.
- Finally, face to face training sessions will take place in the Regional Centers of the Profession of Education and Training (CRMEF).

On the other hand, the introduction of the Information and Communication Technology (ICT) in the Moroccan educational system was first launched within the framework of the GENIE[8] program strategy to facilitate and enhance a pedagogical culture that promotes the integration of ICTs into teaching and learning in all public schools.It was based

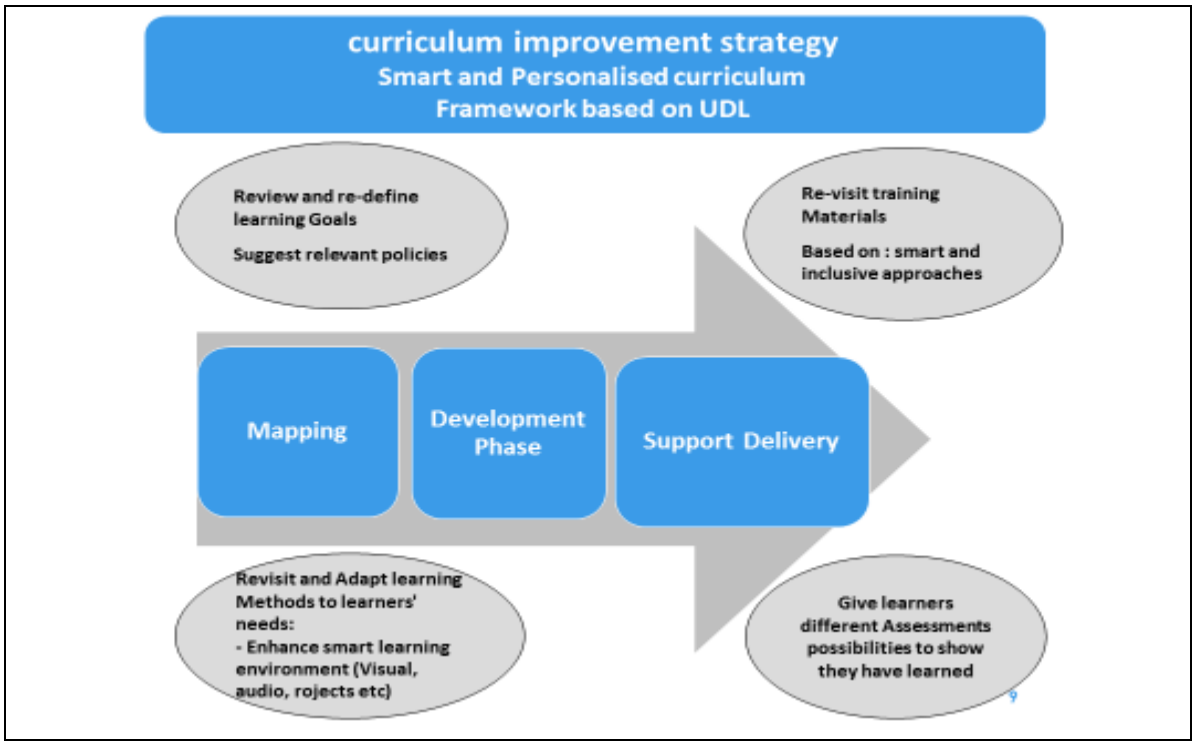
[8]Generalization of Information and Communication Technologies in Education in Morocco

on three axes: infrastructure, training,and digital content reaching about230,000 teachers, inspectors, technicians, heads of schools, etc. The GENIE program aimed only to support teachers and educational staff in their daily work.At this stage, the program is not applying any systemic approach to transform the education system into smart learning.

Teacher Training Curriculum Improvement Strategy Description

Based on the context analysis that included data collection, policy and technical documents analyses, as well as interviews with some contract-teachers, this curriculum improvement strategy will present the following action proposal axes:

- Policy review and development of curriculum framework
- Revision and development of training material
- Enhancing smart learning environment
- Review assessment methods and approaches



Source: Module 4 : Smart and Personalized Learning Curriculum, Gabriel El Khili

❖ **Enhancing the Policy Aspect**

Based on the results of the analysis of the existing policies and legal documents related to the recruitment, training and professional development of the contract-teachers in Morocco, the following recommendations and actions are to be taken:

- The contract-teachers related policies should align with the *ILO/UNESCO*

Recommendation concerning the Status of Teachers (1966)[9] that govern the profession of teachers and educational staff.

- The existing teacher and curriculum policies should also reflect the spirit and Sustainable Development Goal (SDG 4), aiming to "*Ensure inclusive and equitable quality education and [to] promote life-long learning opportunities for all*"[10].

- The MoE should revisit the governing policies highlighting the special status of this category and aligning it with the existing teacher policies and status in the country, where this category of teachers is considered as "experts" in mission.
- The MoE should establish bridges between contact-teachers and teacher civil servant status, linking it with accountability, productivity and excellency.

❖ **Enhancing Teacher Training and Professional Development**

According to the MoE "Guide of the training of contract-teachers", the training programs include distance training (online), face to face training, and in-classroom training, enhancement in terms of curriculum quality. In fact, the new mission of the 21st century teacher requires new vision, skills and competencies, which will only be possible if the teacher education policies, training programs, and training centers are reformed. According to UNESCO, a teacher policy reform should be guided by the same overall vision and essential characteristics as the wider education policy. it should be strategic, holistic, feasible, sustainable, and context-sensitive[11].

In order to enhance the quality of such teacher training curriculum program, applying the Shulman's Major Categories of Teacher Knowledge[12] theory could bring a substantive added value to the program. It is highly important for the program to look into the pedagogical-content knowledge, which is a combination of content, and pedagogy that is uniquely important for teachers, and their own professional understanding.

On the other hand, establishing linkages between general pedagogical knowledge, with special reference to those broad principles and strategies of classroom management and organization appear to transcend subject matter. The following points should be taken into consideration:

- The training material and pedagogy should be based on Pedagogical Content Knowledge (PCK)[13] teaching; and should also introduce inclusive, personalized and smart learning concepts, as well as 21st century skills and competences.
- The training material should also introduce research and creativity modules in the training, enabling the future teacher to cope with the children's different needs and expectations.
- The distance (online) training that implies another learning method namely Self-Learning also needs substantive revision: the analysis

[9]ttp://www.ilo.org/wcmsp5/groups/public/ed_dialogue/sector/documents/normativeinstrument/wcms_493315.pdf
[10]unesdoc.unesco.org/images/0023/002352/235272e.pdf
[11]http://unesdoc.unesco.org/images/0023/002352/235272e.pdf, P.16
[12]https://www.ets.org/s/educator_licensure/ckt_handout.pdf, p.2
[13]https://www.ets.org/s/educator_licensure/ckt_handout.pdf, P.1

showed that the students who are not necessarily ICT versed, are having serious difficulties. Distance training as well as self-learning require some basic skills and competences and specific material. Creating platform as it is today is not the right answer to this kind of approach. The MoE should reconsider this crucial training part by introducing tools, materials, and pedagogical methodologies capable of helping the future teachers to achieve the training goals and purposes.

- The introduction of the Self-learning approach in this training -though very pertinent- needs special attention requiring adequate self-learning material; specific tools, PEER support, and ICT literacy.

❖ **Enhancing Smart learning environment**

Throughout the recent education reforms that have been implemented in Morocco; the MoE has been trying to introduce principles of personalized learning and child-centered approach, as well as 21st century teaching and learning concepts through practice. Furthermore, the educational system has opened up to its surroundings, and to the global trends mainly in terms of ICT and innovation. In this respect, Morocco has been investing substantive funds in ICT to enhance schools and educational institutions; in fact, the GENIE program is one of the major initiative of the ministry. Despite the fact that the program has been providing the possibility to use ICT in education and to use an online platform as well as Self-Learning approach, the analysis of different documents shows that the program is far from being a smart learning model.

The analysis of the learning environment for this contract-teachers training program has also identified several gaps that should to be addressed through the following suggestions:

- The design and implementation of a smart learning environment in this context is meant to provide self-learning, self-motivated and personalized services where the learners can attend courses at their own pace and are able to access the personalized learning content according to their personal needs[14].
- From a theoretical point of view, Smart learning environments are combination of inclusive, personalized and innovative approaches teamed with an empowering physical environments that are enriched with digital, context-aware and adaptive devices, to promote better, efficient and faster learning.
- As mentioned above, the development of this smart learning environment is based on the Blended Learning approach, which is a combination of instructional modalities and delivery media, of instructional methods and of online, face-to-face and in classroom instruction and training.
- In view of the program initial design and implementation, the future teacher is expected to be efficient, innovative, performing, and self-learner; this implies that the teacher should be prepared to be more proactive and creative. In this respect, it is crucial that

[14] https://www.youtube.com/watch?v=5MXOrGMzQsg

future teachers are empowered with research and analysis training. It is also important to provide them with adequate technologies (Media developer, Photoshop and publisher, Microsoft Mix etc) that can help them being innovative and creative.

- In addition to the substantial renovation of the infrastructure and provision of future teachers with adequate material including mobile learning devices, hardware tools, applications and technology, the following smart learning solutions are suggested to respond and improve the main gaps identified:

To improve pedagogy:

- Flipped classroom
- Blackboard
- Video conferencing (Google Plus
- MOOC modules
- Synchronizing teaching
- Post-synchro recorded courses
- YouTube
- Games
- Documentaries
- Blogs
- Audio-based messaging
- Microsoft Mix:
- Dropbox and Google Docs
- Mobile learning devices : Smartphones, Cellphones, tablets
- Social Media (team work / PBL) + learners' social engagement

The online learning tools, social media, Office Mix, and synchronizing sessions will allow the contract-teachers to adapt their training to their tempo and they will also be able to personalize their learning approach to be more flexible, adaptable and relevant. In fact, the choice of these smart solutions has been strategic due to the relevancy of these tools with regards to the educational objectives that the training program could achieve in terms of qualification of future teachers.

❖ **Enhancing Assessment and Evaluation**

The teacher assessment system (pre and in-service) is another issue identified with regards to quality teacher training program in Morocco. In this respect, this *curriculum improvement strategy* suggests some actions to enhance the efficiency and to improve the quality of such existing system, which seems to be knowledge based, traditional and mostly summative, both in approach and method.

In this regard, it is important to understand that by introducing online assessment, the strategy builds contract-teachers capacities to understand the smart learning approaches in classroom. This is fundamentally about helping teachers to learn the best methods to teach students.[16]

- The first aspect that should be introduced in such system is the online evaluation methodology and assessment instruments. The purpose of such online assessment will serve to review the applied teaching methodology and provide learners with constructive and timely feedback.
- The evaluation and assessment should also be based on the following:

To improve martial development:

- Media developer (creation of material)
- Photoshop and publisher
- Microsoft Mix:
- Music mixer

To enhance collaboration and reach out:

- Video calls (Skype)
- Twitter (social and info sharing)
- Wikispaces Classroom (collaboration, communication: **teachers**, **admins** + parents and students)

To improve Education Information system and Data analytics:

- Statistics & Open EMIS
- Big Data (education planning + policy adaptation)[15]

[15] *Module 5 - Week 3 Assignment. Gabriel El Khili*

[16] http://eprints.qut.edu.au/15058/1/15058.pdf, p.6

- *Formative feedback, which is very important for the learners' development; it should be timely and in written form*
- *Descriptive feedback, which provides students with elaborative and specific feedback to help them progress throughout the training*
- *PEER and individual feedback, which can help the future teachers to dialogue, reflect and progress together*
- *Formal and informal feedback, which are important mechanisms for assessing blended learning and providing constructive evaluation*
- Within the framework of the learner-centered approach, the teacher's role in terms of ensuring both formative and summative assessment is very important.
- The use of ICT in assessment will help the teacher to assess every student's participation, interaction and productivity, and provide feedback and orientation on a regular basis.

Research Questions and Methods

Research Questions

- ❖ To what extent was the teacher-contract approach in Morocco convenient to the inclusive quality education and quality lifelong learning approach as defined in the Education Agenda of 2030 and the Sustainable Development Goals ?
- ❖ How was the training and professional development strategy in Morocco designed and supported by innovative ICT, as well as smart learning approaches?
- ❖ How does the Ministry of Education (MoE) in Morocco cope with the shortage of teachers mainly in terms of recruitment (legal status of new teachers)?
- ❖ How does the Ministry of Education (MoE) in Morocco cope with basic training curriculum and professional development of those new recruited teachers?
- ❖ How does the Ministry of Education (MoE) in Morocco use ICTs / smart learning in dealing with teacher training mainly with the huge number of the new recruited teachers (24.000) this year?
- ❖ To what extent does this recruitment and training strategy of MoE will enable the achievement of inclusive quality education in Morocco. In addition, what are the long-term (positive and negative) effects on the educational system if any?
- ❖ What are the lessons learnt from Morocco based on this approach that can be shared with other countries to cope with teacher shortage in terms of recruitment, teacher training, professional development and curriculum deployment?

Data Collection and Analysis

In dealing with these key questions, this paper has adopted a qualitative and quantitative research approach.

In addition to the collected insights from some contract-teachers and officials mainly through Skype, phone conversations, and a survey with open-ended questions for data collection; the research paper is analyzing the various components of the processes of

implementing a policy related to recruitment, training and professional development of newly recruited teachers in the context of teacher shortage in Morocco. The research is reviewing mainly existing legal frameworks, policies and procedures related to teachers' recruitment, and examining existing teacher training, curriculum development and professional development programs, including the application of innovative pedagogical approaches, concepts and methodologies in these programs. Twined with large desk review, the analysis is also looking into the usage of ICT and innovative approaches regarding online and face-to-face training programs.

Expected Findings and Recommendations

The research analysis has allowed highlighting some recommendations as well as some key actions regarding a new teacher training strategy that could enhance inclusive quality education for teaching and learning in Morocco.

The findings of this research suggest some ideas and pathways, which could contribute to supporting the enhancement of inclusive quality education, mainly in terms of teacher training, curriculum deployment and learning outcomes. The research has also highlighted some lessons learnt from Morocco related to MoE's response to teacher shortage that could be shared with other countries in the Arab region and globally.

The research further suggests some recommendations regarding improving of the curriculum of "contract-teachers" training in Morocco.

Concerning Morocco's engagement in the new policies and strategies related to "contract-teachers"; it is highly recommended to look into the following:

Firstly: In the absence of a comprehensive teachers policy; the objectives of this new initiative may fail, creating two category of teachers in the country who are neither motivated nor qualified equally.

Secondly: Since the recruiting, training and practicing are taking place at regional level, with academics' responsibilities, there is a risk that the human and financial resources may not be equally allocated across the country; hence, creating problems of fragmentation of resources and regional equity.

Thirdly: While decentralization is a crucial mechanism in addressing quality teaching and learning issues[17], the absence of a robust curriculum framework may create issues related to coherent quality education system in the country.

Finally: With regards to the benefits and risks related to the implementation of the strategy, a close look at the context, as well as the strategy axes, it is suggested that the introduction of the new trainings curricula content, methodologies, concepts and delivery environment imply changes at all levels.

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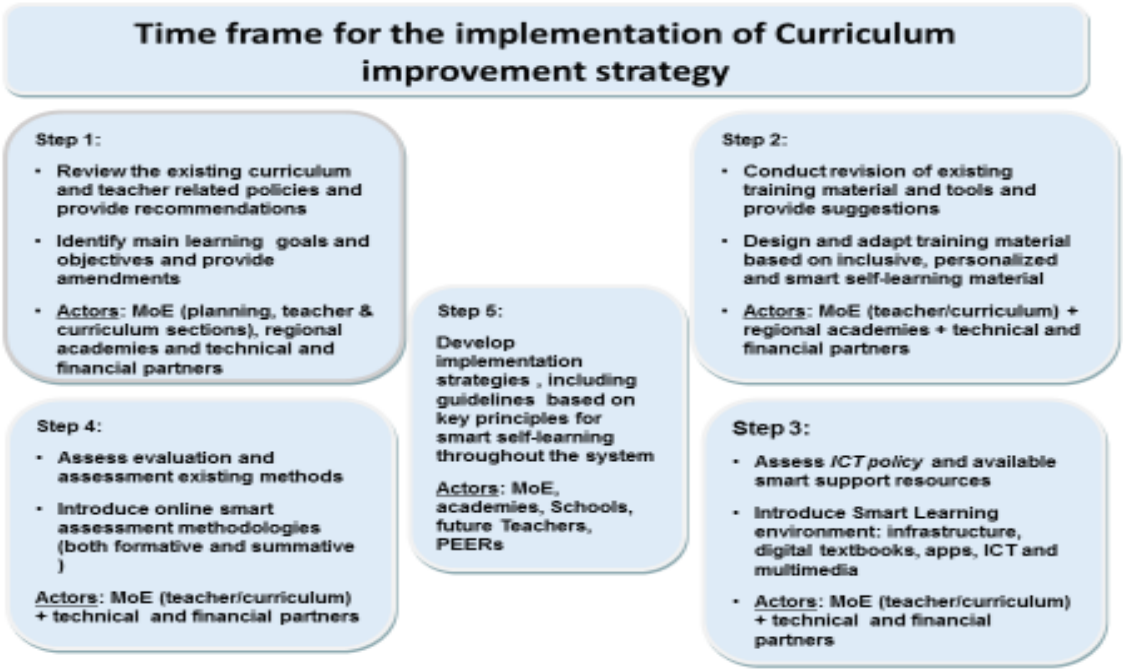


Lebanese PL and SL Implementation of the Strategic Plan

Presented By
Dina Noueiri (LAU-Beirut)

Supervised by
Dr. Gihan Osman (Egypt)

Introduction

Based on personal experience as a teacher and trainer in both public and private schools, I noticed that teachers, principals, parents and stakeholders always complain about the inability to achieve the standards they put for their schools. I also observed a lot of effort put in any project for improvement and change. This is due to a myriad of factors we might call challenges.

The public sector in Lebanon faces big challenges and is always under-privileged. After the end of the civil war, Lebanese government put education as a priority and launched its humongous development plan in 1994 which marked a starting point for further plans and initiative.

This plan was characterized by the initiation of the new national curriculum and the new textbooks and resources. Following the end of the Lebanese civil war, education was put forward as a major means for rebuilding Lebanon and promoting social cohesion and unity. A huge education development plan was launched in 1994 culminating in the birth of a new national curriculum in 1997 and the production of new textbooks. "Although the quality of education improved in public schools, dropout rates continued to be high, particularly amongst the most disadvantaged groups"(Shuayb, 2016). In 2009 A new curriculum was implemented and again the CERD with the ministry of education and all the stakeholders put their efforts in it and it stopped right now due to political and financial issues.

Statement of the problem in the public sector

Lebanon as known to all its neighbors is reputable in offering high educational services and is famous in having good standard universities and schools in the Middle East. Historically, families over the region tended and still send their children to study in Lebanon. The famous universities were built in the 19th century such as the American University of Beirut and the University of Saint Joseph. Makassed Islamic schools were also hosting all the gulf and Africa region families and mostly the diplomats.

To add up to the good reputation, in 2009 Beirut, for its pioneer role as a dynamic city for promoting culture diversity ;international dialogue and books, was nominated as the BOOK CAPITAL. In the Lebanese constitution, every child has the right to learn and Lebanon has made a commitment to the United Nations and the

Human Rights to work on providing High quality education in tangible projects and plans such as the 5 Year Plan to improve country's public schools that was initiated in 2010 .

All these efforts and achievements could not make a success story for the public sector schools and universities. The Educational system in Lebanon could not but be affected by politics and sectarian practices. As a result, it couldn't reduce the inequalities in our society and the sectarian ruptures among its population. On the contrary the sectarian divisions and social inequalities were emphasized in all the practices from the ministry to the school to the CERD etc…which is considered very dangerous to society and to any reform attempt. All the reform attempts by the ministries consecutively were aborted by the following minister unless the minister stays longer than is required to finish his plan. The 5 year plan in April 2010 made a difference in the approach to education. The emphasis is no more on specific areas in the curriculum. More stress is needed on Arts, Technology, socio- emotional and physical education. Before, teacher stress more on sciences and languages. More decrees were created to hire new teachers in this field in collaboration with the Civil Service Council by drawing standards for hiring and recruiting. Follow-up was needed also at schools by the guidance and counseling department, training was offered by the Training centers distributed all over Lebanon by high steak trainers from K-12.What was missing?

The plan did not survive and the implementation is incomplete because there is no harmony among the main players of the academic orchestra. CERD and the ministry of Education, for example, are major players and there is a need to have a common vision and to work together to build it. Good teachers should be hired as written in the plan and those who do not meet the standards should leave, this applies to school principals and to trainers as well as to school buildings and renovations.

All was mentioned in details .But the practices were not that transparent and implementation was not as easy as it looked on paper. All the strategic plan was made but when it comes to implementing a lot of obstacles started to show and grow until it blocked the way and diverted the plan from its main course.

Suggested Personalized and Smart Learning Plan (PSSP)

In the current digital age, schools need teachers and learners ready to meet the challenges of teaching, learning, and working in a hyper-connected, collaborative, creative, and information-rich world. Teachers and students need just-in-time and just-as-needed access to computers in their classrooms to support content-based instruction. They need access to experts and resources and the ability to use powerful and high-speed Internet tools such as video and multimedia. However, technical infrastructure, as important as it may be, is not enough. For the promise of educational technology to be fulfilled, technology needs to be matched with digital-age curriculum, instruction, and assessment.

The Ministry of Education and Higher Education (MEHE) and the Center for

Educational Research and Development (CERD) must recognize that technology can provide learners with the necessary knowledge, aptitudes, competencies, and expertise to meet the demands of a digital world. But it can do so only when technology is embedded in a curriculum that focuses on promoting the skills and competencies necessary in the workforce of today and tomorrow— the ability to communicate using electronic tools, collaborate with online communities, organize data, evaluate information, and create new knowledge.

The coming paragraphs will incorporate the implementation of the PSSP on the Lebanese national level.

The implementation strategy is adopted from "The Teaching and Learning in the Digital Age: Lebanon's National Educational Technology Strategic Plan" done by "The Ministry of Education and Higher Education" Strategic Planning Development Team on July 31, 2012.

This Plan provides a roadmap and a set of recommended actions to ensure the proper integration of ICT within the Lebanese general education system and the appropriate implementation of all the relevant components of the SP including but not limited to:

- Implementation and development of the new curriculum
- Development of assessment tools
- Development and implementation of a professional development plan
- Creation of a support system
- Equipment of all the centers and schools

The PSSP will provide a roadmap and a set of recommended actions to ensure the integration of personalized and smart learning within the Lebanese general education system. It is based on six pillars—infrastructure, curriculum, instruction, assessment, professional development, and management and leadership.

Rationale

The Rationale behind this plan is to prepare teachers and students to work in a collaborative, digital, creative, and information hyper-connected world. The competency based curriculum which was launched in 2009 is an important tool but when merged with technology it can provide teachers with a unique continuing opportunities to refine and achieve competencies needed to teach and achieve high quality outcomes by using the most recent methods required by both technology and the competency-based curriculum.

To accomplish this, CERD will revise the national curriculum, developing competency-based outcomes that reflect the skills that students need to succeed in a world where problem-solving, entrepreneurship, intellectual risk-taking, and creativity are highly prized forms of human capital. Beginning in the next academic year, CERD will integrate technology outcomes into this revised curriculum so that technology and digital content are aligned with curriculum-based standards and competencies (Fayad, 2012).

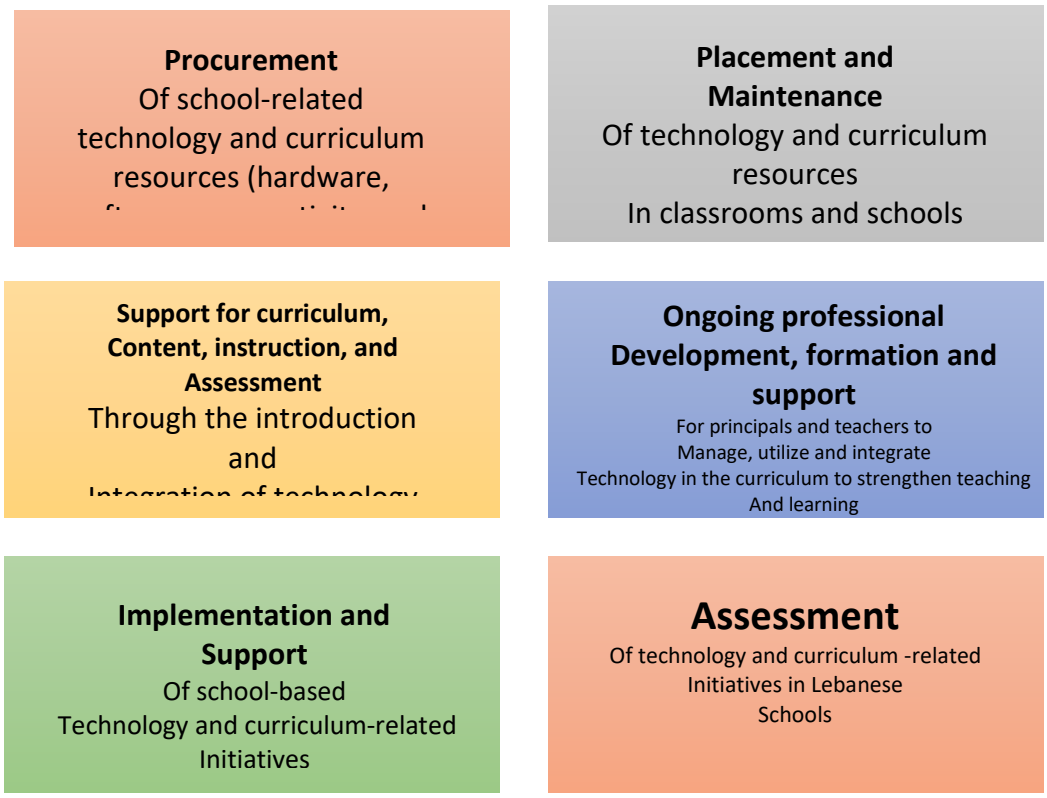
The road ahead is an enormous challenge requiring tremendous and effective cooperative efforts. We call upon all

stakeholders from both the public and the private sectors to continue joining forces toward reaching full implementation of the vision, goals, and objectives of the PSSP.

The PSSP sketches a roadmap that will extend 5 years in order to be able to initiate and guide the implementation and integration of PSSP within all levels of the Lebanese general education system. This strategic plan must include a vision, set of goals and objectives, and recommendations that government, donors, private- and public- sector implementers, schools, principals and teachers must address so that every stakeholder is working from and toward the same vision, goals, and outcomes. The strategic plan covers the period of September 2017 to September 2022.

The PSSP must be developed by representatives from the Ministry of Education and Higher Education (MEHE) and the Center for Educational Research and Development (CERD) with the support of the NGO's Education Development Centers, research centers and Universities.

Areas Guided by the Strategic Plan 2017–2022 Strategic Plan Guide



PSSP initiatives

Technology is an added component to this strategic plan. However, Technology alone cannot improve an educational system. It cannot turn a bad teacher into a good one, transform a low-performing school to a high- performing one, or improve student achievement. Therefore, successful PSSP initiatives must focus on:

- The core components of teaching and learning—leadership at the

national, regional, and school levels;

- Reforming the curriculum to align with what we know about how students learn and the types of skills necessary to succeed in a highly competitive global economy;
- Improvements in recruiting and hiring and paying qualified teachers and then continually improving their skills and holding them accountable to standards of professional behavior;
- using instructional practices that have been shown to help students master content; and aligning the assessment Organization of This PL Curriculum

Challenges and Suggestions

The Lebanese educational system faces a number of challenges in isolation, a national educational technology strategic plan cannot correct all, or even many, of the challenges listed below. Nor can technology alone reform what troubles an

educational system. However, as Figure 5 shows, an educational technology strategic plan *can* begin to address these challenges by using technology as a vehicle to focus attention and efforts on the critical factors that affect the quality of teaching and learning.

Challenges to the Lebanese Educational System	**How the PSSP Can Help to Address Such Challenges**
A perceived lack of high-quality instruction in government school, particularly at the pre-secondary level	• Complement and support reform in key areas within the educational landscape that are associated with high-quality teaching and learning and student achievement—curriculum, instruction, assessment, and leadership—and propose ways in which technology can promote and support reform efforts within these areas • Focus attention on selection and recruitment of new teachers; and ongoing professional development, support, and evaluation of existing teachers; and offer new models of pre-service and in- service teacher professional development • Identify and begin to address critical inputs within the system (school leadership, teacher professional development and support, and a teacher evaluation system that includes the use of technology as an indicator of effective teaching) that must be addressed for technology to be deployed and integrated in ways that promote improved student learning
A shortage of teachers in specific subject areas and in certain regions of the country (Ministry of Education and Higher Education, 2010)	• Initiate the use of online or e-learning to provide students with high-quality content and instruction, particularly in areas where teachers are in short supply and/or where face-to-face teaching is of low quality
Comparatively low achievement levels of students in Lebanon vis-à-vis their international peers	• Coordinate technology implementation efforts with targeted improvements in key areas of student learning, such as improving students' math, science, and English-language abilities • Focus national efforts on providing modern, well-functioning technology and technical expertise to Lebanese schools so that teachers use data • to quickly identify and address areas of difficulty for students in general, identify at-risk learners in particular, and use data to differentiate instruction and support for these learners

	• Use technology to collect and examine data on how students are/are not meeting learning targets, identify areas of weakness within content areas, provide formative feedback to students, and help teachers identify new instructional strategies to improve student performance
A national curriculum that does not integrate technology	• Identify and integrate ICT skills and competencies to support student knowledge and skills • Use the depth and reach of multimedia, online learning, simulations, and computer-based learning so that students can learn at their own pace, move beyond text to more visual and conceptual understandings of information, and apply knowledge in real-world situations, particularly in key content areas, such as math, science, and English • Use high-quality digital content to support content-focused competencies
Poor to uneven technology infrastructure and Internet connectivity in Lebanese schools, particularly in certain regions	• Focus national efforts, and multi-ministry initiatives, to provide digital equipment, digital content, and high-speed Internet access to all schools, particularly in traditionally underserved regions
A focus on high-stakes examinations; the Brevet and Baccalaureate that do not reflect the types of skills necessary for a digital age, such as critical thinking and information literacy skills	• Prompt reflection, discussion, and revision of the national examination system to integrate digital-age literacies and digital-age thinking skills • Move toward making examinations more efficient through computer- based and computer-adaptive testing
Uneven teacher professional development and the lack of a functioning teacher support system	• Drive university faculties of education, relevant ministries, and educational providers to furnish teachers and school leaders with access to high-quality e-learning content related to their professional responsibilities, and access to professional development and ongoing support to enhance their professional qualifications and competencies • To widen the scope of the Practicum experience in the Private schools of Education to cover both private and public schools in order to expose all the private universities' candidates to the public education system

A lack of data at the national level	• Implement a national Educational Management Information System to support the goals of the national educational technology strategic plan • Automate data collection, analysis, reporting and dissemination by, within, and across schools, mohafazas (districts), and MEHE • Support system wide changes by providing policymakers, principals, teacher support staff (DOPS), teachers, and students with a variety of digital tools and skills for project planning, data management, activity planning, and information analysis, fostering deep understanding of content, and communication and collaboration to support, extend, deepen, and transfer educational reforms
The High numbers of Refugees in public schools and the increase of social emotional and physical support	• Build a support unit by the MEHE and hire experts and teachers majored in counseling, psychology, special education or any relevant field to support teachers and students at school • Provide early and fast intervention to problems in education. • Provide the necessary fund • Provide a quick procedure for compulsory measures

A Challenge to Add

• The Number of the Non-Lebanese students, based on the CRDP statistics for the academic year 2015-2016, in the public schools was 154115 students which means 14.8% of the total number.

The Syrian students represent 42.8% of this number. The number is augmenting as the crisis did not end. According to Shuayb (2016) Over 400,000 Syrian refugee children in Lebanon are of school age. A third of them are currently accessing a wide variety of education while the remaining have been out of education for over three years.

The Syrian students compose almost 9% of the number of students in the public schools and the majority are enrolled in the preschool and primary classes.

Vision

In such an improved learning environment, this strategic plan envisions the following:

- Students are actively engaged with content of the new curriculum and with one another in the process of learning. They work individually and collaboratively in a variety of challenging, stimulating, and higher-order activities using the most appropriate types of classroom technology—to inquire and access

information based on their inquiry; to wonder, explore, and hypothesize; to generate new ideas, solve problems, and create new paradigms and understandings; and to share, communicate, and collaborate with colleagues across the globe as they do so.

- In these classrooms, the teacher's role is transformed from a dispenser of information to a facilitator of student learning—he or she designs activities and units of study that promote higher-order thinking, probes student thinking and guides and supports students as needed, plans learning experiences that capitalize on the features of technology, and employs technology as appropriate to engage students with content, to promote student sharing and communication of ideas, and to assess whether and how students have learned.
- Principals and school leaders establish a school-based vision for how technology and curriculum supports instruction and assessment based on information, best practices, and research. They set guidelines, provide models, and identify and procure resources and support to help teachers adopt and integrate technology to improve achievement for all learners. They understand how technology can support and streamline data collection and management, and how technology can deepen understanding of content and modernize assessment. They exhibit appreciation for appropriate instructional strategies supported by technology. They provide supportive and facilitative leadership and foster a climate of innovation and risk-taking with technology. Principals and leaders make careful budgetary and resource decisions about the school's technology "infrastructure" to provide teachers and learners with continuous access to well-functioning and up-to-date technology.
- Within this classroom ecosystem, technology is used for formal classroom learning and after-school programs to address students' various learning styles, academic needs, and academic, vocational, and personal interests. It is used to find, enrich, and furnish content; as a research,

Conditions Necessary to Ensure the Success of PSSP Vision

Theory of Change (Bradach, 2003:p. 19)

A *theory of change* reflects an organization's view of why a program or initiative (such as educational technology) works and its belief about the norms and practices required to produce successful outcomes for its key constituents. The success of any ICT initiative will be strongly influenced by the complexity of the organization's *theory of change*—the degree to which it can be articulated and standardized and the number of activities required to create the desired outcomes. For organizations seeking to produce value on a broad array of dimensions, identifying the necessary interventions and ensuring that they are all in place is a complex undertaking.

An organization with a strong theory of change will be able to specify not only how it is going to affect, for instance, students' increased literacy levels (through the use of

digital "talking books" or the use of multimedia to scaffold a learner's ability to decode and comprehend text), but also which of its activities are essential in creating positive outcomes and how those activities must be executed. With a clear understanding of its theory of change, a school understands why it is doing what it is doing and can identify the activities and elements critical to nurturing successful interventions. Without a strong theory of change, implementation, replication of activities, and evaluating success becomes extremely difficult. It becomes hard to know what is working and why— and thus difficult to successfully extend, transfer and scale the practice.

Conditions to Attain the Vision

Attaining the vision, goals, and objectives of this strategic plan demands that the following conditions be fulfilled. These are not options; they are necessities and include:

1. Additional and sufficient budget allocations for MEHE to fully implement this national educational technology strategic plan
2. Development and communication of a clear theory of change and a holistic model of reform that balances customized school-based and regional needs with a comprehensive and intensive approach to technology focused on the ultimate goal of student learning
3. Responsive, proactive, and streamlined decision-making at the national level
4. Development and nurturing of a dedicated corps of advocates who consistently advocate, promote, persuade, model—and who are recognized, rewarded, and encouraged—to push innovations forward (Fixsen et al. 2005)
5. A nationwide focus and meticulous planning by national entities such as MEHE, CERD, other ministries, Faculties of Education, and donors staying the course over many years to create and implement the framework, policies, enabling environment, pressures, and support needed to allow reforms around technology, curriculum, instruction, assessment, and teacher and principal capacity to coalesce and take root
6. Adoption and/or development of high, clear, fair standards and establishment of mechanisms to ensure that all actions and inputs are geared toward attaining these standards
7. A continuous and sequenced approach to the plan initiatives, involving a vision, meticulous planning and goal setting, implementation, ongoing evaluation to uncover strengths and weaknesses in implementation, and revising and refining vision, goals, plans, and implementation.
8. Sufficient and flexible inputs, equipment, maintenance, training, and financing with adequate and proper follow up for improvements and alterations when needed to each of the mentioned tasks.

9. Continuing decisions and outcomes based on reliable data .The data must be collected through a mechanism of ongoing tests, evaluations, and assessments of the PSSP initiatives, outcomes, activities, outputs and inputs to prevent judgments based on agreements, public relations, and authorized bureaucracy.

10. Continuing investment in building high quality human resource from both national and regional teachers, leaders, teacher trainers and educators, inspectors, and officials in education.

11. Ongoing technical and human assistance and support by qualified , trained and considerate personnel to maintain and ensure the right use of the investments in all the components of the PSSP from leadership practices, to professional development, to content (written or digital), to software/ hardware, network and connectivity.

    All the above mentioned conditions are major requirements to the success of the PSSP. Over and above, this plan is in need of a shared vision by all the players and a sense of responsibility, sense of purpose, and accountability to attain the goals and objectives and transfer it from paper to real life.

Actions to be taken

In the PSSP, the additional smart and digital component presented by technology practices and equipment is not a mean for success; nevertheless, technology is the tool for educational reform and is used to empower teaching and learning and consequently student achievement and teacher performance.

In order to implement properly all the initiatives, goals and objectives, a series of actions and policies should be performed.

The following section of the PSSP outlines the actions that must be first of all institutionalized, implemented, designed, expanded, voiced and communicated to ensure the implementation of the PSSP goals and objectives with quality, fidelity, coherence, consistency, and sustainability. Failure to adequately implement these recommended actions threatens the overall feasibility of the PSSP; hence careful attention is required to such actions to increase the chances of a successful realization of the vision and goals of the proposed PSSP will be successfully realized.

National policies and actions are a must do for the success of this plan to link all the components together (vision, goals and objectives) in a chain and the actions should be implemented simultaneously in reference to one another not in a sequence or in a hierarchy because we might go backward or forward depending on the circumstances and results.

Action 1: Policies and procedures must me created to illustrate the capacity of MEHE to implement the goals and objectives of this national educational technology strategic plan.

Action 2: Develop an accountability-based teacher evaluation system that reflects, among other behaviors, technology integration supported by learner-centered instruction and balanced assessment.

Action 3: Create an evaluation unit within the Ministry of Education and Higher Education so that independent evaluations can be conducted for purposes of accountability and learning.

Action 4: Rigorously evaluate technology initiatives before, during, and after their implementation.

Action 5: Raise the capacity of the regional education offices of MEHE and regional centers of CERD so that they can successfully carry out the goals and objectives of this national educational strategic plan.

Action 6: Enhance the leadership skills of principals and other administrators to offer instructional guidance to teachers and lead schools toward academic excellence in a digital age.

Action 7: Build the capacity of new and existing professional development providers and support personnel to design and carry out high-quality professional development and provide teachers with school-based support.

Action 8: Provide ongoing, extensive professional development to teachers so that they know how to integrate technology into curriculum, assessment, and instruction.

Action 9: Provide ongoing school-based supports to teachers to ensure that they implement innovations with fidelity and quality.

Action 10: Involve parents and communities in all phases of technology-related initiatives to create buy-in and support.

Action 11: Furnish schools with portable digital devices.

In order to do that MEHE should develop and administer a school readiness protocol to assert readiness for ICT that assesses the following areas:

- Infrastructure: Electricity, Internet access, location of schools near existing Internet backbone, space, security, and structural stability, etc.
- Human capacity: Teacher and student skills, knowledge of ICT for teaching and learning, etc.
- Human readiness: Understanding of the potential value that technology adds to learning, willingness to participate in professional development, etc.
- Budget: Money to cover the recurrent costs associated with ICT provision

Action 12: Fast-track broadband connectivity to schools.

Action 13: Assume and adopt a concerted and multifaceted approach toward developing, procuring, and using high-quality digital content.

Action 14: Work with schools to address the increased energy demands associated with technology.

Action 15: Provide school-based technical support.

Action 16: Help schools budget for ICT for new equipment and maintenance of existing equipment and resources.

Action 17: Retro-fit existing classroom spaces and design future classroom spaces

to accommodate the design demands required by teaching and learning with technology.

Tiered implementation of the PSSP

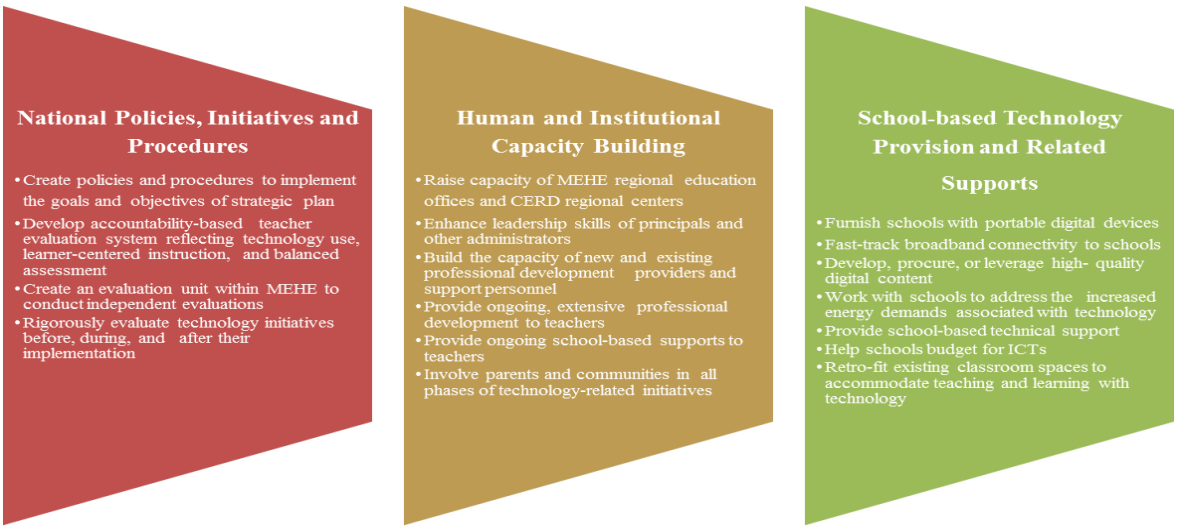
The Implementation plan will be based on six pillars:

Infrastructure, curriculum, instruction, assessment, professional development, and management and leadership.

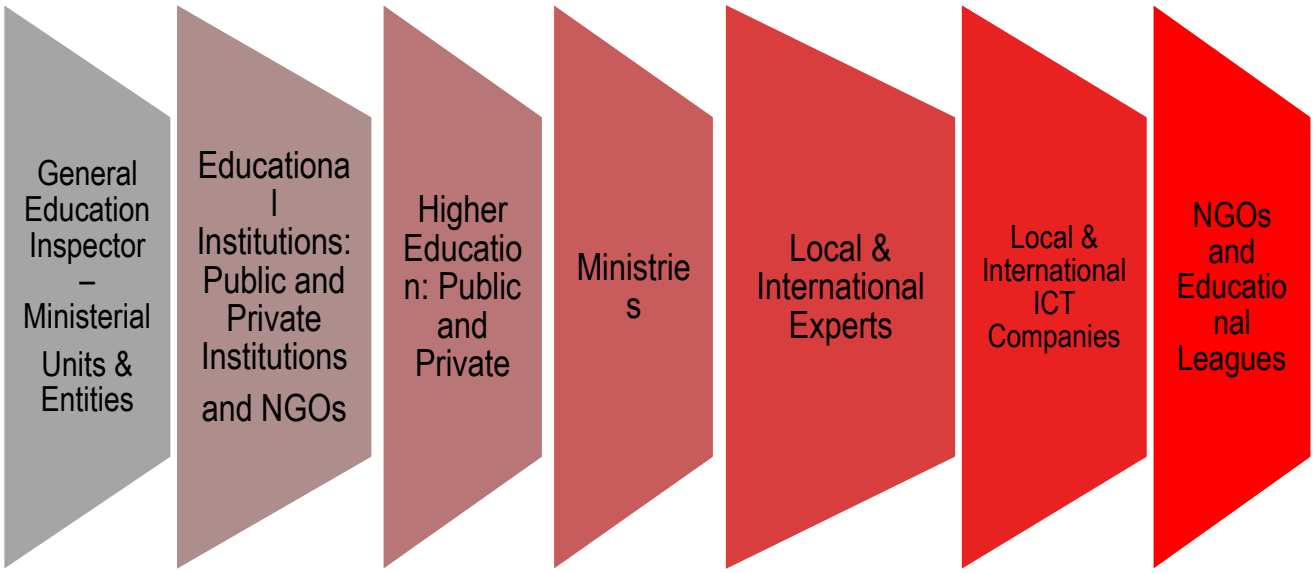
The time of the implementation will be 6 years. The first 3 years the implementation will take place in one school from each district (Muhafaza) as a pilot school. Gradually, every year the experience will spread until it covers all Lebanon. During the first 3 years, the teachers and principals will be trained to accept and understand the change. The steps of implementation are:

- A totally new school will be built to meet the specifications of the PL and SL strategic plan. It is easier to implement and embed all the needed equipment and infrastructure in a new setting than to renovate .It will not inhibit the growth of the institution or the school if it is newly built. What will inhibit a new school from growing is the staff and the policies implemented.
- The first three years the school will be piloted and new teachers and principals will be recruited based on specified criteria
- Plans for the professional development prior the opening of the school, during and after (on-going) will be set (curriculum, teaching strategies, PL planning, PL and SL philosophy, classroom management, time management, etc…)
- Assessment and evaluation systems will be chosen to help in the advancement of the school, teachers, school management and students.
- A whole credible and professional team will be recruited to manage wisely and lead the school to achieve its goals

Recommendations



Major Stakeholders of the SP



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Exploring a New Innovative Approach for Teacher Professional Development in UAE: A Pilot Study

Athra Sultan Alawani

Abtar Darshan Singh

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Abstract

Teacher development can either play a critical role in meeting teachers' needs and wants, or it can frustrate teachers and keep them from reaching their full potential. Therefore, it is essential to understand teachers' perceptions and needs about their experiences in participating in professional development programs. In this study, teachers' perceptions about the current professional development practices were explored and analyzed in order to have broad understanding about their needs, awareness and desires. Besides, the use of mobile devices as learning tools was examined to evaluate teachers' acceptance and readiness for a mobile learning approach. The current study is the first phase of a large research attempting to design and develop a mobile learning ecosystem which has both intelligent and immersive principles to reinforce teachers' professional competencies in the UAE.

The results of this study are from a pilot of the survey questionnaires which were distributed to thirty teachers. Data collected from those teachers was by the electronic-base questionnaire developed using Surveymonkey. The study revealed the importance of providing personalized professional development, whereby teachers depend on their self-learning to cater to their needs and preferences for professional development. The diversity and quantity of online resources available in e-learning and mobile learning are considered for most of teachers a valuable resource repository to improve their professionalism. The teachers in UAE are highly receptive and ready to adopt a smart mobile learning system.

Keywords: *Teachers professional development, Mobile learning, Digital learning, Mobile learning ecosystem.*

1. Introduction

Enhancing teacher learning is considered globally as a key route to improving students' achievement, thereby contributing to the development of nations. United Arab Emirates (UAE) has highly attention in improving the education system whereby teacher performance is one of the crucial issues in its reform. Accordingly, there is a dire need to develop teachers' performance to ensure the UAE vision of a mature and evolved society is achieved. However, like many other countries, the UAE is facing the challenge of how to

ensure that their students receive high-quality education from well-trained and capable teachers who will suit the teaching to the needs of 21st century learners.

It would seem common sense, that professional development will have a positive impact on student learning if it was effective in promoting those teaching practices that researchers have identified as making the greatest impact on student learning (Cole, 2012). However, Cole (2012) also acknowledged that most professional development efforts are ineffective in bringing about enhancements in teaching and students outcomes. Certainly, effective professional development requires being sustainable, ongoing, in-depth and manifesting active engagement in professional practices. There is a need to transfer the traditional approaches of "one size fits all" to "one-size fits one" for a more personalized and contextual environment that will enable to empower the teacher to contribute effectively in preparing students for the future. Not surprising, emerging technologies should be effectively integrated in teacher professional development programs and used to supplement in-person training in order to enhance personalization, diversity and depth of instruction.

The aim of this study is to explore teachers' perceptions about the current state of their professional development in UAE public schools as well as their awareness and acceptance of using mobile devices as learning tools in their professional learning. This research is a pilot phase for the bigger research that intends to propose a new innovative mobile learning ecosystem that can be used as an alternative or complementary approach in teacher professional development.

2. Purpose and significance of the study

The act of teaching is becoming increasingly complex and highly requiring teachers to continue to build up a sophisticated pedagogical repertoire, especially when newer technologies are perpetually providing phenomenal power to the teaching and learning process. Teachers need to be able to apply a range of practices for varying purposes to incorporate different kinds of knowledge and skills and be used in various combinations fluently and flexibly (Bransford, Darling-Hammond & LePage 2005; Cole & Knowles, 2000; Darling-Hammond, 1998; Turner-Bisset, 2001cited in Board & Evans, 2006). Practically, as teachers today are one of the 21st century workers, they need to learn how to be fast, flexible, self-directing and creative. There is still a gap between current and desired teacher's professional development despite the implementation of a variety of professional development practices. Ineffective professional development opportunities provided to teachers are required to be replaced with effective ones that are seeking new learning, applicable to classroom, sustained and can authentically enhance students' learning outcomes. Furthermore, teachers as adult learners are generally autonomous and self-directed, relevancy-oriented, goal-oriented and practical. They usually ask for recognition

and respect for their prior knowledge and experiences (Perkins, 2010).

It is important to investigate the teachers' perceptions about their professional development in attempting to innovate and define new approaches of professional development by utilizing the power of emerging technologies. Looking for the most important aspects they care about in professional development will be a key success factor of the new provided solutions. In addition, the proposed solution should tackle the crucial challenges they faced in current professional development programs. Mobile learning can be used smartly in offering innovative training methods for more personalized teacher professional development and will certainly be more convenient to teachers as it enables teachers to work, learn and reach their full potential in the workplace. Thus, this study aims to explore teachers' inclinations in using mobile technologies as a learning tool.

The study is significant in the field of education in that it gives essential knowledge related to the professional development of teachers especially what is the current state and how to reach a better situation. This study is significant to people in the academia, stakeholders, policy-makers, principals, and teachers for several reasons. Firstly, , the timing of the current study is right as the Ministry of Education (MOE) UAE has started a major professional development exercises to improve teachers' competency in rapidly emerging technological learning environment and change their mindsets to perform their new role as a coach for students' learning. Secondly, the study is useful for those interested in mobile learning in education and training and how it could be used for teacher professional development and in any workplace.

This study is the first phase of a large research trying to design and develop a mobile learning ecosystem which has both intelligent and immersive principles to reinforce teachers' professional competencies in the UAE. It aims at exploring the teachers' perceptions about the professional development such as, how did they value the different approaches suggested, what are their views about the most important aspects of effective professional development, the challenges they faced for active participation and their use and awareness of mobile technologies as learning tool. This study will answer the following questions:

1. What are teachers' perceptions of professional development programs that they have participated in?
2. Could the mobile learning be an alternative approach to supplement the current professional development methods?

3. Literature Review

3.1 Teachers' Professional Development

3.1.1 Teachers' Professional Development in UAE

3.2 Mobile Learning in Teachers' Professional Development

3.2.1 Teachers' Acceptance and Readiness for Mobile Learning in their Professional Development

4. Methodology

To answering the study's questions, a quantitative descriptive research method was employed to investigate the teachers' perceptions and needs to improve their professionalism especially through using emerged technologies. The questionnaire was created after deep exploration of the literature about the teachers' professional development, characteristics of the effective professional development, challenges for effective participation, and users' behavior in using mobile technologies as learning tools. The results exposed in this study are from the pilot test of the questionnaire which it was distributed to thirty teachers to solve it and reflect on its suitability to research's aim. Data collected from those teachers was by the electronic-base questionnaire developed by Survymonkey.

The questionnaire consists of 6 parts. The first part consists of demographic information. The second part is background information about the choosing the most impactful professional development programs they involved in and about the suitable time to attend the professional development activities on mobiles. The third part consists of 8 famous approaches of professional development and needs from the teachers to express their value of these approach in five-point rating scales (1-5) indicating their value: 1= No value, 2=Low value, 3=Moderate value, 4=High value and 5=Very high value. In the case, teacher hasn't experience such programs, he choose "Not applicable". The value of Cronbach's alpha (a coefficient of reliability) of this part is 0.756 which is the measure of internal consistency. The fourth part consists of 16 statements of the success factors for an effective professional development program. Teachers should rate the importance of each factor in five-point rating scales (1-5): 1= Not important at all, 2= Low importance, 3=moderately important, 4=Important and 5= Very important. This part has high value of Cronbach's alpha which is 0.957. Beside the correlation between the items in average is >=.50 which mean there is relationship between the statements. Part five, is about the challenges faced in participating in professional development programs. It consists of 11 statements and the teachers indicate their agreement in each one. This part uses the five-point rating scales (1-5) indicating their opinion: 1 = strongly disagree, 2 = disagree, 3= moderately agree, 4 = agree and 5 = strongly agree. The value of Cronbach's alpha of this part is 0.650. Last part is about evaluating the teachers' acceptance of mobile technologies as training tool. It consists of 10 statements and needs the teachers to indicate their agreement on each one. The value of Cronbach's alpha of this part is 0.919. Descriptive statistics (means, percentages, frequencies) and graphs were used to analyze all data. The degree of agreement for part 3, 4, 5 and 6 was calculated as presented in the following tables.

Mean	Weight	Level of measurement
1 to 1.80	1	Not value
1.81 to 2.60	2	Low value
2.61 to 3.40	3	Moderate value
3.41 to 4.20	4	High value
4.21 to 5	5	Very high value

Table 2: the degree of agreement for part3

Mean	Weight	Level of measurement
1 to 1.80	1	Not important
1.81 to 2.60	2	Low importance
2.61 to 3.40	3	Moderate important
3.41 to 4.20	4	Important
4.21 to 5	5	Very important

Table 3: the degree of agreement for part4

Mean	Weight	Level of measurement
1 to 1.80	1	Strongly disagree
1.81 to 2.60	2	Disagree
2.61 to 3.40	3	Moderately agree
3.41 to 4.20	4	Agree
4.21 to 5	5	Strongly agree

Table 4: the degree of agreement for part 5,6

The sample test consisted of 30 teachers. The table summarizes the description of the demographics information of teachers.

Category	Descriptor	N	%
Gender	Male	4	13.3%
	Female	26	86.7%
Age Group	<25	0	0
	25-34	4	13.3%
	35-44	21	70.0%
	45- 54	5	16.7%
	55 +	0	0
Years of teaching experience	1-5 years.	1	3.3%
	6 – 10 years.	4	13.3%
	10 – 15 years	16	53%
	16 +.	9	30%
Grade Level	Kindergarten	0	0
	Cycle 1	8	26.7%
	Cycle 2	8	26.7%
	Cycle 3	9	30.0%
	Cycle 2 & 3	5	16.7%
Education level	Diploma	1	3.3%
	Bachelor	23	76.7%
	Master	5	16.7%
	PhD/EdD	1	3.3%
Smartphone used	IPhone	18	60%
	Galaxy Samsung	7	23%
	Both	13.3	13.3%
	Others	1	3.3%

Table 5: the description of the demographics information of teachers

It is clear that the most of teachers involved in the pilot test of the questionnaire are in average age between 35-44 by 70% of sample size, and have the teaching experiences more than 10 years by 83%. 76.7% of them hold the bachelor degree and 20% obtained the post graduated study

5. Results and Findings

A summary of the main findings is presented below:

1. Teachers' experiences and age

The results reveals that most teachers have teaching experience more than ten years and their age is more than 35. Hence, may expect that there is need to develop a strategy dealt with changing teachers' mindset. The rising question is how can reinforce teachers' motivation and morale toward active participation in professional development?

2. Use of the smartphone

The questionnaire reveals that 96.7% of teachers use smartphones. And 93.3% of teachers expressed their agreement that they have good experience in using mobile phones for searching, retrieving and sharing information. Thus, we can except that they are familiar and comfortable in using smartphone in their daily life aspects.

3. The most impactful professional development programs they involved in:

Figure1 depicts the most professional development programs that have positive impact on teachers' continuous professional development.

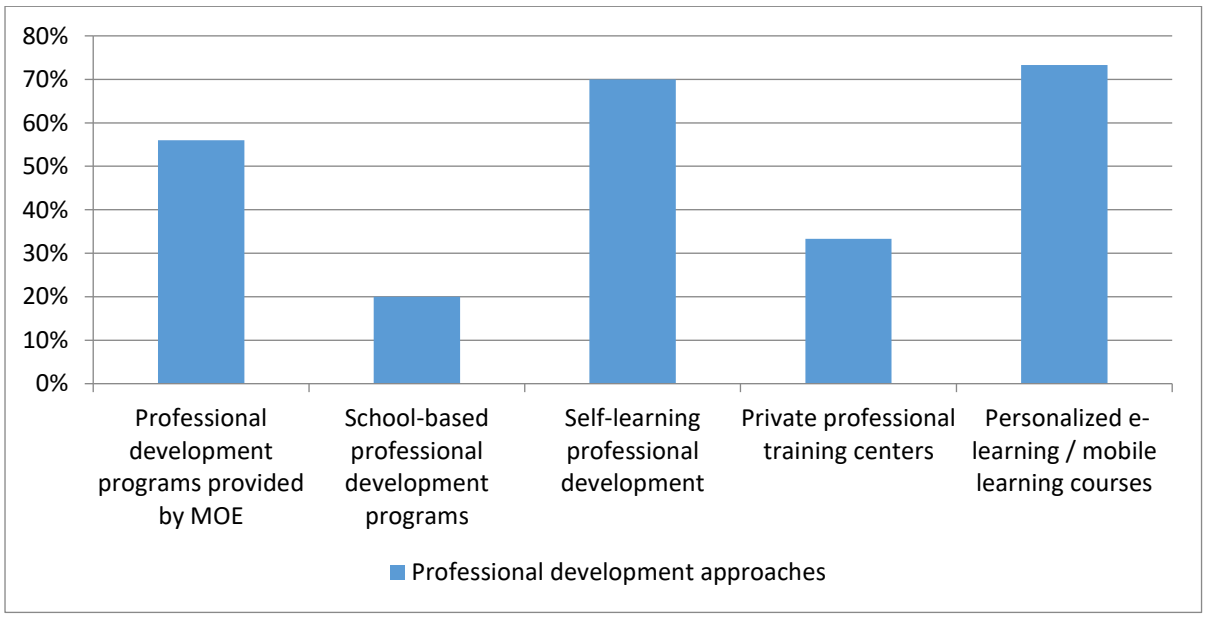

Figure2: Impactful professional development programs

As appear in the graph the teachers mostly rely in their professional learning in seeking to eLearning/mobile learning courses that answer their needs by 73% as well as they depend on their self-directed learning in order to improve their professionalism. Approximately half of teachers feel that professional development programs provided by MOE are impactful. The results showed the less effectiveness of the school-based professional development programs.

4. *The suitable time to attend the professional development activities on mobiles:*

Figure2 shows the best time(s) to attend to professional development activities on mobiles is/are: (you may choose more than one option)

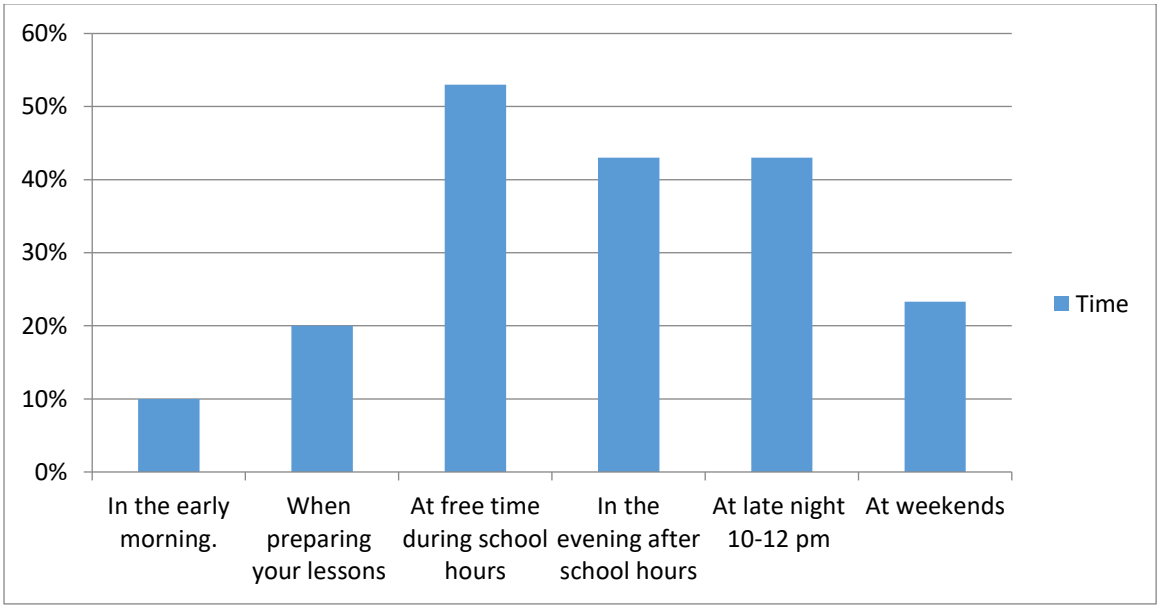

Figure 3: Times to attend the professional development activities in mobile learning

The results showed the most appropriate time for teachers to attend professional development activities in mobile learning is in the free time during school hours followed by the evening after school hours and at late night. Thus, teachers prefer to have a right to choose the time that convenient for them to involve in professional learning.

5. *Teachers' value of various approaches of professional development*

The results showed that all the teachers have involved in training workshop and peer observation and feedback professional development approaches. However, in the average 4 out of thirty didn't try before the other six approaches. The resulting descriptive statistics gathered from the responses of the teachers in expressing their value of various approaches of professional development is summarized in Table 6. The result excluded the "Not applicable" choice from the responses.

No	Statement	Mean	SD	Degree	Rank
5	Attending training workshops	4.0	0.605	High value	1
7	Obtaining academic qualification (Diploma/ Master / PhD)	3.92	1.60	High value	2
6	Peer observation and feedback	3.9	0.70	High value	3
1	Online courses	3.8	1.48	High value	4
8	Feedback / coaching from mentor or supervisor	3.5	1.16	High value	5
2	Online professional learning communities	3.44	1.40	High value	6
4	Attending conferences	3.3	1.48	Moderate value	7
3	Face to face Professional learning communities	3.1	1.21	Moderate value	8

Table 6: The response on the value of various approaches of professional development.

The result showed that all the professional development approaches have high value except the attending conferences and face-to-face professional learning communities which have moderate value. The results obtained the consistent with the 2nd result whereas the teachers value the self-based learning and online learning approaches. However, attending training workshop has the highest value.

6. Characteristics of effective professional development:

Table 6 shows the most important characteristics of effective professional development from the view of teachers. The characteristics are ranked based on the mean value of the teachers' responses.

No	The PD program should:	Mean	SD	Degree	Rank
2	meet my professional needs	4.27	.740	Very important	1
6	be more practically oriented (Experiential learning)	4.27	.868	Very important	2
13	Have the state of the art online training platform (like a LMS- Learning Management System)	4.20	.847	Important	3
12	help me to integrate new innovative technologies into classroom	4.17	.875	Important	4

7	use learning strategies that deepens my knowledge and skills	4.13	.730	Important	5
14	enhances my critical comprehension of applied learning strategies and educational technologies	4.10	.803	Important	6
1	be relevant to the curriculum needs of UAE schools	4.07	.944	Important	7
3	meet my networking needs with other teachers	4.07	.691	Important	8
4	be given by expert in the field	4.07	.828	Important	9
5	have an element of fun built into it	4.07	.828	Important	10
9	track my participation and activities and provide personalized feedback	4.07	.907	Important	11
11	promote collaborative learning using smart technologies	4.07	.785	Important	12
10	use the emerging technologies like: mobile devices, Virtual/Augmented Reality, mobile apps, Gamification, etc.	4.03	.890	Important	13
15	Provide badges as evidence of my active participation	4.03	.765	Important	14
8	challenge me to think creatively and critically	4.00	.871	Important	15
16	Use various emerging technologies to update my knowledge and skills as a life-long learning process	3.97	.928	Important	16

Table 7: The importance of each statement for the effective professional development

The most important characteristics are that professional development program meets teachers' needs and be more practically oriented (experiential learning). All other statements can be considered also highly important in implementing professional development program where the mean of teachers' responses approximately 4.

7. *The challenges in participating in offered professional development courses*

No	The following are challenges I currently faced when participating in PD programs	Mean	SD	Degree	Rank
1	Lack of time with tight schedule in school time	4.53	.730	Strongly agree	1
5	Professional development courses are not suited to my needs	4.23	.817	Strongly agree	2
8	There is no adequate follow-up	3.97	.809	Agree	3
7	Poor quality of professional development programs (poor content, poor trainer)	3.80	.887	Agree	4
4	Very lengthy training courses, sometimes 4 to 5 days.	3.73	.907	Agree	5
9	Online professional development resources are mostly in English	3.60	.894	Agree	6
2	Attending workshops outside school hours	3.53	1.008	Agree	7
11	Poor quality of online courses (poor multimedia, lack of engagement, motivation..)	3.57	.971	Agree	8
10	I lack experience in online courses	3.47	.973	Agree	9
3	Travelling to distant training centers	3.33	1.184	Moderately agree	10
6	High cost of professional development courses when I paying for them	3.33	.922	Moderately agree	11

Table 8: challenges in participating in offered PD programs

The result showed that there is really crucial problem in teachers' participation in the offered professional development if most of those challenges are not addressed. There are strongly agree that the offered programs didn't suite the teachers' needs besides the tight schedule of teachers during the school time which prevent them from participating. The two challenges are strongly related together where the busy teachers will not be encouraged to involve in such programs that not answering their needs and interest. Teachers also expressed their agreement on the lack of follow-up procedure after involving in professional development program. Thus, there is no guarantee that the acquired learning in training sessions is being transferred in the classroom practices. Teachers moderately agreed with that travelling to distant training centers and buying for the needed courses offered from private training centers are issue.

8. *Teachers' use of mobile devices as learning tool*

This part is about measuring the teachers' use and readiness for the mobile learning as an alternative and complementary approach in professional development. Table 9 shows the teachers' responses on the statements to express their inclinations in using mobile technologies as learning tool. The statements are ranked descending from the strongly agree to lesser.

No	Statements	Mean	SD	Degree	Rank
10	I prefer a simple and intuitive interface for training using mobile technology	4.30	.596	Strongly agree	1
8	The mobile learning system should be accessible and available anytime, anywhere	4.27	.521	Strongly agree	2
9	The ease of use of mobile learning system increases my interest	4.27	.640	Strongly agree	3
3	I have good experience in using mobile phones for searching, retrieving and sharing information	4.23	.568	Strongly agree	4
2	I think mobile learning will facilitate my career development more efficiently	4.10	.481	Agree	5
7	I am aware of high quality mobile learning materials	4.13	.629	Agree	6
6	I am eager to participate in mobile learning courses	4.07	.691	Agree	7
5	I prefer downloading the learning materials in mobile storage for off-line use	4.03	.809	Agree	8
4	Mobile learning fosters collaborative learning	3.97	.718	Agree	9
1	I use mobile phones for my informal learning needs	3.93	.640	Agree	10

Table 9: Teachers' use of mobile devices as learning tool

The results obtained that the teachers are very good users of smartphones for searching, retrieving and sharing information. They are strongly agree for the some features that should be considered when designing and developing mobile learning system which are respectively 1) simple and intuitive interface, 2) accessible and available anytime, anywhere, and 3) ease of use. Beside they are agreeing with others statement in mean approximately 4.

6. Discussion

7. Recommendation

- Further research on how to provide professional development that more personalized and responsive to the

complex and unique needs and context of the learner.

- linking of professional development to student learning and professional standards for learning
- Developing professional learning framework for teachers that align with context of UAE and high educational standards.
- Utilizing the power of technology in supporting professional development as learning tool, delivering media, collaborative gadget, etc.
- Offering new approaches of professional development like e-learning, mobile learning and blended learning.
- Using multiple measures and data sources to effectively evaluate the complex and multi-faceted nature of successful professional development. (e.g. observation, portfolios, behavioural measures, assessment data, etc.)
- Evaluating participants' satisfaction for continuous improvement.

8. Conclusion

Teachers play a significant role in shaping the lives and careers of their students. Professional development can be the powerful tool for improving teachers' efficacy and thus the students' learning. However, there is need to develop new approaches to teacher learning that create real changes in teacher practice and improve student achievement. Hence, the findings lead to two major questions: How can MOE provide high-quality professional development that is effective in building teacher knowledge, improving their instruction, and supporting student learning? And how can they assess the impact of their efforts over time?

Teachers in the UAE express a desire to more personalized professional training depending on their needs and more innovative methods than what is actually there. Thus, mobile learning combining with effective learning strategies and immersive technologies can be innovative and attractive way in teachers' education. However, most the projects that emphasized on the opportunities provided by mobile devices are experimental and conducted in isolation from professional development programs provided by educational institutions (UNESCO, 2012). Mobile learning environment is still under study and needs more research in order to reform education, specifically, through exploring the learner's cultures, values and local contexts. Mobile learning in professional development can be either as an independent learning delivery method or as part of a blended training program with e-learning and face-to-face components. Nowadays, teachers who want to improve their practice are in charge of their own professional growth by acquiring the necessary skills to customize experiences anytime and anywhere. This is the contention of this research is how to intelligently immerse teachers in capitalising technological affordances to improve themselves in a personalised, on-the-spot manner.

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The application of Lin's conceptual framework of creative pedagogy in Fashion Design education

Shlagha Agarwal

College of Design

American University in the Emirates

Abstract

The field of fashion design has changed tremendously in the last few decades, and educators are challenged to train a rapidly evolving generation of students to work in the unpredictable industry. They need to adapt to these changes and develop an academic approach that will enable graduates to succeed in the time of excessive apparel consumption and production (Faerm, 2015).

Since art and design requires imaginative and innovative approaches to inspire students, it becomes imperative to explore the suitability of pedagogies for fashion design for the enhancement of students' learning. This paper examines the suitability of the application Lin's three-element framework pedagogy to the development of creativity in the field of fashion design. The pedagogy is investigated, analyzed and mapped to the courses offered at the undergraduate fashion design program at American University in the Emirates in the context of professional design practice.

***Keywords**: creative pedagogy, fashion design education, Lin's conceptual framework of creative pedagogy*

Introduction

The field of fashion design has changed tremendously in the last few decades, and educators are challenged to train a rapidly evolving generation of students to work in the unpredictable industry. We are in the beginning of a fourth industrial revolution, and the patterns of production, consumption and employment are predicted to change (reports.weforum.org, 2016). While some jobs may become redundant, other may see vast growth, and new job profiles may be created. Developments in technology are aiding this revolution, laying the foundation of a transformed industry.

The fashion industry is an inherent part of the cultural and creative industries that have witnessed remarkable growth in the last few years and have become fundamental for the development of a knowledge-based economy. UNESCO defines the cultural and creative industries (CCIs) as "sectors of organized activity whose principal purpose is the production or reproduction, promotion, distribution and/or commercialization of goods, services and activities of a cultural, artistic or heritage-related nature" (http://www.unesco.org/new/en/santiago/culture/creative-industries). According to the United Nations, between 2002 and

2011, world trade in creative goods and services more than doubled, amounting to nearly USD 630 billion by 2011 (MENA Design Outlook Report, 2015).

Design industry in UAE

The design revenues generated in UAE were worth $27.6bn in 2014 (MENA Design Outlook Report, 2015), the highest in the MENA region, and the design business in the UAE is forecast to be worth nearly US$36 billion by 2019 (https://www.thenational.ae). The creative industries in the UAE are growing at a rapid pace, and the government is providing immense and impetus. The Dubai Creative Clusters Authority (DCCA) was established in 2014 to foster Dubai's creative industries and harbor talent from across the world by promoting entrepreneurship and innovation (https://dcca.gov.ae/en/about-dcca). As part of DCCA, the Dubai Design and Fashion Council (DDFC) has been established by the Dubai Government to establish and promote Dubai as a regional and global destination for design (https://dcca.gov.ae/en/dubai-design-and-fashion-council). DDFC aims to provide in-depth market intelligence and boost local and regional talent in the field of design. The Dubai Design District (d3) was launched in 2104 as the professional design hub of Dubai offering a custom-built facility for designers, entrepreneurs, international brands, design studios and design industry events (https://www.visitdubai.com/en/pois/dubai-design-district).

Design education in the UAE

Design education in the UAE had been limited to training programs and vocational courses till a few years back. Higher education in design is a relatively new phenomenon, and has now been recognized as imperative to develop the skilled workforce necessary for growth. Numerous institutes offering undergraduate, diploma and short-term courses in the various fields of design such as graphic design, interior design, fashion design, animation, jewelry and product design have been established. The state-of-the-art campus of the Dubai Institute of Design and Innovation (DIDI) is expected to open at Dubai Design District by autumn 2018. With such major strides being taken to promote and provide a platform to local designers, design education in Dubai must progress and evolve to produce graduates well-equipped with the right skills and knowledge to make their mark in the competitive arena.

Literature review

There have been many explorations in art and design pedagogy in higher education. Creative pedagogies help in establishing teaching strategies directed towards fostering creative thinking skills to prepare students for successful professional practice. The concept of creative pedagogy was introduced by Andrei Aleinikov in 1989 when he stated that if pedagogy is the study of the process of teaching, then creative pedagogy is the science and art of creative teaching (Aleinikov, 1989). Creative pedagogy has also been defined by Seals et al as "Teaching and classroom practices that require an unorthodox and/or innovative approach to scaffolding students

in their learning process" (Seals et al, 2017).

MacDonald and Bigelow proposed that theme-based competitions promote learning in fashion design after conducting a study on middle-school students (MacDonald and Bigelow, 2010). The students were involved in a fashion design project, and with the use of an inclusive approach, they had control over the outcome and developed innovative responses. They became an active part of the dynamic creative process - making decisions, setting goals, exploring options and achieving the desired result. This 'learner inclusive' approach, as mentioned by Jeffery and Craft, encourages ownership and control, motivating students to be responsible. They get the opportunity to apply their knowledge and skills to creative problem solving, thereby reinforcing meta-cognitive learning.

Lee examined the role of intuition in the development of creativity in fashion design education. The oxford dictionary defines intuition as "the ability to understand something instinctively, without the need for conscious reasoning" (https://en.oxforddictionaries.com). It is a term close to "gut feeling" that deals with analytical and insightful way of thinking (Taura and Nagai, 2017). Intuition can be helpful in problem solving, and is a tool used by fashion forecasters regularly to predict and develop trends for the coming seasons. They rely heavily on observation, research and intuition to execute the professional activity. Since intuition requires spontaneous actions, it can be used to develop creativity, and therefore finds relevance in fashion design education.

Vaughan explored pedagogical approaches in art and design, and comprehended that there is no "set" or perfect approach that suits fashion design education (Vaughan, 2008). This is due to the fact that this creative field relates to knowledge that may not have tangible constructs due to the unpredictability and uncertain demands of the industry. The students are imparted skills, but the use of these skills and knowledge varies from context to context since they do not learn by rote or formula. Social and political backgrounds frame this pedagogy, enabling them to become successful practitioners through a clear understanding of the context in which the design is to be created. Thus, this pedagogy deals with competencies and skills imparted to the students so they can operate in the "complex of uncertainties". Critiques and discussions play an important role as the students are encouraged to analyze and evaluate their own work as well as of their peers.

Craik had recognized early in 1993 that fashion is clothing behavior that is often determined by situations and contexts and is an integral part of acculturation (Craik, 2003). The cross-cultural differences in the concept of creativity were examined by Weiner through a comparison of certain cultures, and he mentioned how creativity is evolving in the contemporary globalized context (Weiner, 2012).

Though research in fashion design education is picking up, many believe it is still relatively under-theorized compared to other areas of art and design education such as architecture, industrial design and fine arts (Skov et al 2009). This permits fashion educators to develop and support scholarly activities that would enrich students' learning and experience, including innovative fashion design pedagogies. According to Drew, Bailey and Shreeve, there is lack of information about student learning approaches, especially for fashion design (Drew et al, 2002). Since there is increased material and cultural interaction across in addition to massive technological advancement, we need to find and implement pedagogies to prepare students for successful professional practice.

The author had conducted a research previously that explored several creative pedagogies keeping in mind the requirements of the fashion design curriculum (Agarwal, 2017). Through an in-depth analysis of these pedagogies, their application for the field of fashion design was examined, which led to the current research that is more focused and Lin's pedagogy has been chosen as it finds maximum relevance.

Lin's conceptual framework of creative pedagogy

The three elements of creative pedagogy – creative teaching, teaching creativity and creative learning - were first outlined by Lucas in 2001 (Lucas,2001). Drawing from this research, as well as the works of Jeffrey and Craft, Lin proposed a conceptual framework of creative pedagogy to offer a more holistic view of enhancing creativity through teaching (Lin, 2011). This pedagogy suggests a reciprocal interaction between the three interrelated elements – creative teaching, teaching for creativity, and creative learning – illustrating the relationship between creativity and pedagogical practices (Please refer figure 1).

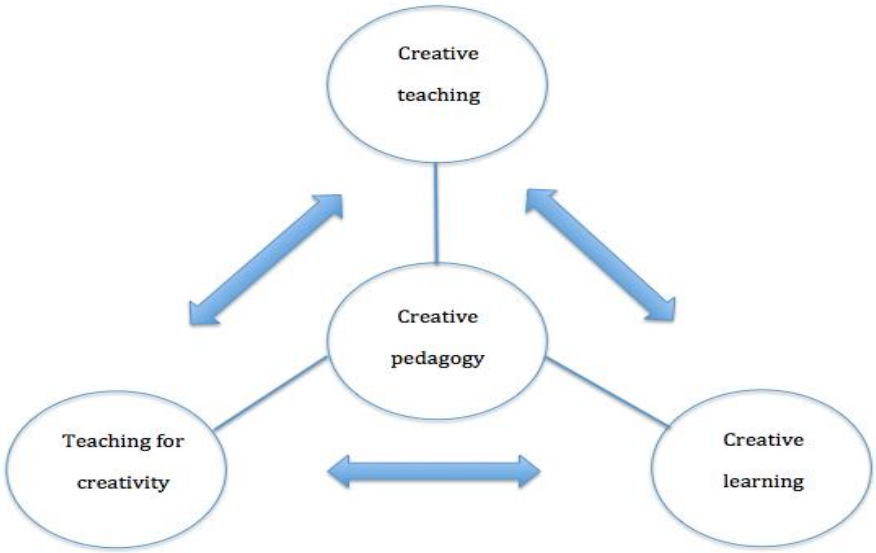

Figure 1: The three elements of creative pedagogy (Lin, 2009)

The first element, creative teaching, focusses on teacher practice and aims to actively engage the learner through imaginative, flexible, dynamic, interactive and innovative approaches. Thus, a creative teacher may not follow a set path for a lecture but achieve the learning outcomes through divergent methods and acting spontaneously. The aim is to foster learning through exploration of new and engaging methods, thereby arousing curiosity and holding the interest of the student at all times. This element hence depends on the teacher and his/her characteristics as well as preparation that will in turn reflect on the students' learning.

The second element, teaching for creativity, considers the significance of a supportive environment by creating a context where the students' contributions are appreciated and they share the responsibility for the outcome, leading to creative development. They feel involved and are a part of the learning process that does not have set results, as fashion and creative fields are subjective with varied opinions that are contextual. The open-minded atmosphere created by the teacher is encouraging and appreciative of independent thinking that passes the decision making and responsibility for learning back to the learner.

The third element, creative learning, is learner-focused and emphasizes the importance of learning through questioning, experimenting, observing and inquiring, drawing on the human nature of exploring out of curiosity. It is a creative interplay between the teacher and learner that develops imagination and possibility thinking.

The ethos of Lin's conceptual framework of creative pedagogy suits the fashion design curriculum as it promotes research, experimentation, innovativeness and autonomy of the student, which are the main features of the program to graduate students well equipped to tackle real world challenges in the volatile industry. The field of design differs from other areas of education since the students are trained not just in the skills required to achieve an outcome, but also in developing contextual responses to unique situations and problems that vary tremendously. There is no set "formula", and they must gauge the situation and requirements to come up with solutions. This leads to successful professional practice and the creation of an identity for the designer.

Methodology

After a careful study of Lin's conceptual framework of creative pedagogy, its applicability in fashion design education was explored by selecting the fashion design program at American University in the Emirates as a sample. Located in Dubai International Academic City, the College of Design at the university offers a four-year undergraduate program with four areas of specialization - fashion design, interior design, animation and graphic design. The foundation year emphasizes several areas of general education, while their creative side is engaged in the core and specialization courses. For graduating as a fashion designer, a student must undertake 11 general courses (33 credit hours), 9 core courses (27 credit hours), 12 specialization courses (54 credit hours) and 4 elective courses (12 credit hours). This mix of courses provides balanced and

comprehensive learning that engages and trains the students for the dynamic design industry. The capstone is the last course of the undergraduate education that includes the development of a graduate portfolio and fashion collection that showcases the student's abilities and launches them into the industry.

A detailed study and analysis of the fashion design curriculum, the courses offered, syllabi, teaching methodologies, resources and learning outcomes was carried out. Lin's conceptual framework of creative pedagogy was mapped to the course offerings. The courses in the program were listed according to the order in which they are studied (Table 1). After review, the applicability of Lin's pedagogy to course learning outcomes was judged in relation to the course content, as well as the projects and practical work required in the course (Tables 2 to 13). Since art and design students rely heavily on their tutors for feedback and assessment of the quality of their work, the pedagogy aims to move in a direction where parameters are not well-defined, rather there is an open-ended process of enquiry, based on experimentation and risk-taking to assess the appropriateness of solutions per context.

Results and Analysis

The fashion design curriculum at AUE is typically framed by practical aspects of courses that aim to provide students the skillset required by the industry. In addition to this technical competence, the education is tailored to stimulate and ameliorate the creativity of future designers through a contextual approach that will enable them to succeed in creative industries.

It was found that Lin's conceptual framework of creative pedagogy is comprehensive, highly appropriate and can be applied to all the courses with variable mapping. This can be attributed to the wide-ranging and all-encompassing nature of the pedagogy as it emphasizes not just teaching methodology, but also the qualities of the teacher, learning of the student and environment of the class/school. Since Lin's pedagogy focuses on open-ended learning and exploration of innovative approaches, only few courses find limited applicability as the learning outcomes for these courses are factual and non-experimental in nature, with very directed and expected results. However, the remaining courses are completely in sync with Lin's pedagogy and it finds 100% applicability. This applicability depends, to a large extent, on the kind of projects assigned for the course since fashion design largely focusses on project-based learning. As the level of the courses goes higher and the students reach 3rd and 4th year, Lin's conceptual framework of creative pedagogy is suitable and can be applied to achieve learning in students that brings out their individuality, creativity and uniqueness, along with full ownership of their work. Therefore, this pedagogy can be used effectively in the fashion design program at American University in the Emirates for the enhancement of students' learning. The supportive climate provided by the university for both the teacher and learner makes it a resonant process and stimulates spontaneity among students.

S.N.	Name of course
1	Introduction to the fashion industry
2	Introduction to textiles, materials and processes
3	History of costume
4	Garment construction
5	Fashion Studio I
6	Fashion Illustration
7	Fashion Merchandising
8	Fashion Studio II
9	Patternmaking
10	CAD for Fashion Design
11	Fashion Design by Draping
12	Capstone Graduation Project

Table 1: List of courses in undergraduate fashion design program at American University in the Emirates

Introduction to the fashion industry	Lin's pedagogy
Understand the stages and key aspects of the fashion design process in the industry	✓
Comprehend the principles, theories and terminology related to the field of fashion	_
Recognize the various segments of the fashion industry and compare their operating styles	✓
Identify and describe the role of technology and software in producing contemporary fashion	✓
% Applicability of pedagogy	75%

Table 2: Mapping of course learning outcomes to Lin's pedagogy

Introduction to textiles, materials and processes	Lin's pedagogy
Understand textile materials in terms of their classification and complete process of production	✓
Use textile terms to identify and define fabrics and their characteristics	✓
Recognize and recommend fabrics suitable for various end uses considering the cost, properties and performance	✓
Demonstrate the knowledge of fabric care and maintenance procedures in accordance with the content, structure and finishing	✓
% Applicability of pedagogy	**100%**

Table 3: Mapping of course learning outcomes to Lin's pedagogy

History of costume	Lin's pedagogy
Understand how social, economic, and artistic movements influence fashion.	_
Identify the general styles of clothing in all historical periods	✓
Appreciate the history of fashion design in the Far East & Asia and recent adaptations	✓
Analyze the design features and elements by comparing historical and contemporary examples	_
Demonstrate the ability to interpret and apply historical inspirations to contemporary fashion design	✓
% Applicability of pedagogy	60%

Table 4: Mapping of course learning outcomes to Lin's pedagogy

Garment Construction	Lin's pedagogy
Identify the parts and skillfully operate a sewing machine	_-
Construct a variety of sewing techniques such as seams, seam finishes, garment techniques, hems, and closures	✓

Select suitable fabrics for garments, home decorating items, and fashion accessories according to sewing patterns and the intended end use of items	✓
Interpret the guide sheet and various instructions and symbols to complete a sewing project	✓
% Applicability of pedagogy	75%

Table 5: Mapping of course learning outcomes to Lin's pedagogy

Fashion Studio I	Lin's pedagogy
Apply design principles and the knowledge of fabric and notion selection to execute a structured design process in developing original garments	✓
Understand the application of lean methodology of learning to research and create effective and economical design solutions	✓
Learn and implement the basic process of apparel pre-production, from design concept through finished sample	✓
Demonstrate the ability to produce well-fitted garments through the appropriate implementation of pattern making and garment construction skills	✓
% Applicability of pedagogy	100%

Table 6: Mapping of course learning outcomes to Lin's pedagogy

Fashion Illustration	Lin's pedagogy
Draw the fashion figure and communicate apparel design details using a variety of media	✓
Develop skills for effective visual communication using concept boards, technical design procedures and other presentation methods	✓
Learn to analyze garment styles, fabric drapes and reproduce them to fit the fashion figure	✓
Understand the various types of fashion art, including advertising art, working drawings, flats, spec drawings and portfolio art	✓
Become familiar with fashion illustration styles of the past and present and develop a personal style of illustration and presentation techniques	✓
% Applicability of pedagogy	100%

Table 7: Mapping of course learning outcomes to Lin's pedagogy

Fashion Merchandising	Lin's pedagogy
Understand the fashion merchandising industry in today's market	_
Document fashion merchandising resources, brands versus private labels	✓

Analyze the role of fashion media in predicting consumer buying trends	✓
Interpret retailing formats and trends in retail growth and expansion	✓
Communicate the activities involved in preparing for and making fashion market buying trips	✓
% Applicability of pedagogy	80%

Table 8: Mapping of course learning outcomes to Lin's pedagogy

Fashion Studio II	Lin's pedagogy
Demonstrate the ability to construct garments using intermediate skill level patterns	_
Adapt the required skills to execute a project including selection of fabric, fit and construction techniques	✓
Produce two types of made-to-measurement trousers with fly zipper, welt pocket, side pocket and elastic band by considering the different elements and defining the cost factor	✓
Construct a tailored jacket using interfacings, linings, shoulder pads and other techniques involved in producing this type of garment	✓
% Applicability of pedagogy	75%

Table 9: Mapping of course learning outcomes to Lin's pedagogy

Patternmaking	Lin's pedagogy
Recognize and understand the various patternmaking tools and appropriate methods	_
Showcase the required skills to execute patterns with a tailor-made fit	_
Apply a specific patternmaking method and skills to solve a given design problem	✓
Design and create patterns for two versions of made-to-measurement pants	✓
Create made-to-measurement blouse and dress patterns and exhibit advanced knowledge of different manipulations of collar and sleeve patterns	✓
% Applicability of pedagogy	60%

Table 10: Mapping of course learning outcomes to Lin’s

CAD for Fashion Design	Lin's pedagogy
Understand stages of development and components of a design portfolio	✓
Implement product development and creative techniques through appropriate software	✓
Development of garment collections incorporating illustrations, flats, and storyboards	✓
Recognize of the application of flat measurements and product specification incorporating industry standards	✓
% Applicability of pedagogy	100%

Table 11: Mapping of course learning outcomes to Lin's

Fashion Design by Draping	Lin's pedagogy
Demonstrate the principles and process of draping muslin pieces on full-scale dress forms to develop: basic foundation patterns, design variations of the basic patterns, and advanced designs	✓
Articulate standards and specifications for evaluation of finished drapes	✓
Use and experiment with the principles of draping to create new designs	✓
Evaluate and critique apparel designs in terms of the integration of materials, design lines, construction processes, and price point	✓
% Applicability of pedagogy	100%

Table 12: Mapping of course learning outcomes to Lin's

Capstone Graduation Project	Lin's pedagogy
Develop and implement a strategy for a design project	✓
Successfully execute and document an original design project from concept to completion	✓
Demonstrate creativity, critical thinking and problem-solving skills	✓
Interpret and analyze the findings of a design project from an industry perspective	✓
% Applicability of pedagogy	100%

Table 13: Mapping of course learning outcomes to Lin's

Limitations and Implications for future research

The research surveyed and identified one pedagogy that is encompassing and extremely relevant for fashion design education. The applicability of Lin's framework of creative pedagogy was analyzed for a fashion design curriculum in the United Arab Emirates, to prepare future designers to tackle professional challenges in the dynamic world of design, in line with the country's vision of becoming the design destination in the region. The study included an in-depth review and exploration of the pedagogy and its applicability to fashion design education, an area with insufficient research and documentation.

Though the study was limited to the undergraduate Fashion Design program at American University in the Emirates, it provided insight about the connection between creative pedagogies and fashion design. Further research could be conducted by applying the pedagogy in the classroom, and then investigating and evaluating its impact. The area of research may be expanded to include more universities within and outside the UAE, as well as more pedagogies could be analyzed for their suitability.

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Impact of Leadership on Achievement of Students in

AlAin K-12 School

Introduction

School leadership is an important element in teaching and learning. The performance of teachers and students, development of educational practices in and out schools and implementing modern technology depend on the school leadership. School leaders follow and apply different strategies and styles according to the circumstances and situations. They mainly focus on achieving high performance of students. They try hard to do whatever they find it successful and effective in order to support student performance. School leadership can transfer schools from low performance to high performance. The aims of the styles and strategies which are applied in schools are to support, develop and increase achievements and outcomes of students.

This study is important because it focuses on the performance and achievements of students. Educational achievement is commonly valued worldwide, while optimised educational leadership is another goal that is considered common knowledge. The proposed research addresses both of these areas; while gaining insight into educational leadership, program structure and developmental issues, and organisational culture. These are valuable to the field of education, they contribute to the existing knowledge base, and the study serves to generate an original data set. There are great efforts in among researchers to improve school leadership because it is the most important element in improving students' outcomes and performance. School leadership will be more effective and successful when it focuses on teaching and learning. Leithwood and Riehl (2003) conclude that we need more studies and researches because we don't know more about effective school leadership. Dinham (2007) asserted that educational leadership is a major influence on the quality of teaching and learning, and thus plays a critical role in student influence. School leadership can make observable and great contribution to improve and develop schools and performance of both teachers and students.

The questions of this study arise from the case study which I did about impact of implementing modern technology on performance and outcomes of students. There are some questions which need more clarification and explanation. For example, we need to identify best practices and leadership techniques that will benefit this and similar schools in the UAE. We also need to understand and know what techniques and practices can school leaders use to facilitate change and transformation for areas of improvement? What are the areas in which improvement will be needed? What makes students ready and willing to learn? There should be more focus on types of professional development opportunities that exist for teachers and

staff to gain knowledge and skills in these areas. These questions are results of different strategies, styles, techniques and implementing modern technology in schools. My case study was about impact of implementing modern technology on performance of students. Three different methods are used. They are face-to-face interview, school observation and a case study. From these three methods, those questions are identified.

More studies are needed in this field to measure the amount of impact of using technology on achievement of students in the UAE schools. The importance of using technology practices in classrooms is popular and recommended in most school in the United Arab Emirates. Integrating modern technology in education is to transform teachers' role from "sage on stage to be "guide on the side" and students' role from passive to active (Jacobsen, 1998). In classrooms, some studies indicate that using smart technology can improve students' performance and outcomes because it captures students' attention. It motivates students to work hard and invent new ideas and solutions.

We have to define the meaning of performance of students before we start studying and discussion the impact of leadership on the performance of students. It may be qualitative aspects or quantitative aspects. Quantitative aspects are the parts which can measure. They are grades of students. On the other hand, qualitative aspects could be speaking attributes, behavioural attributes, personality traits and skills.

The research questions which have been selected to address the most significant aspects of student achievement and leadership developments capable of improving performance. These include determining the aspects of leadership observed to have affected performance of students. The primary aim of the research is to examine the strategies most conductive to shifting student performance; with this, the aim also encompasses addressing obstacles to implementing the most effective strategies acknowledge or proposed, as well as identifying opportunities for these developments. To find a relationship between types of leadership and the performance of students. The impact of leadership strategies on the performance of students. If there is a relationship or not in order to improve the performance of students.

There are a lot of benefits of this research. It is very important issue in the UAE because it helps school leaders to get and use the effective strategies which will support and improve students' achievements since the scope of education is the performance of students. This topic will help school leaders to apply useful and effective strategies in order to achieve the main goal in education which is the performance of students. It is useful for new school leaders who want to get high performance and achievement of students.

This research paper contains some main sections. First sections reviews some studies, articles and journals about impact of school leadership on performance of students and effective leadership styles and strategies. The second section is about

methodology. The third section is about best practices in literature. Next, there is a framework of best practices that school leadership can use to improve performance of students. Finally, some important recommendations are offered for best practices and high performance.

The following section reviews some studies and articles about effects and impact of school leadership on the achievement and outcomes of students.

Literature Review

The potential for educational leadership to impact student achievement has been examined in formal studies across the past decade, with researchers recommending strategies or new directions to be considered. Dinham (2007) asserted that educational leadership is a major influence on the quality of teaching and learning, and is thus plays a critical role in student influence. Barker (2007) studied the influence of the government in relationships between leaders and outcomes, stating "the government's determination to assume a strongly positive relationship between leaders and outcomes has compromised the principle of evidence-informed policy-making and that we need a different approach based on a broadly defined, qualitative conception of student success" (p. 21). De Maeyer et al. (2007) also conducted a study in the same year, concluding that the choice of conceptual model in assessment has a significant impact on the implications for achievement, while researchers and developers should thus be duly mindful of this.

More recent studies have continued to isolate impacts of leadership most conducive to improved achievement. Leithwood and Mascall (2008) stated that influence appears to a virtually infinite resource in schools, while "the more those in formal leadership roles give it away, the more they acquire" (Leithwood and Mascall, 2008, pp. 529). Later, Leithwood, Patten, and Jantzi (2010), stated that school leaders and analysts should shift emphasis towards evidence regarding any school or personal components that influence student learning, as they determined a wide range of variables (both those controlled by leaders and those out of control) can play a critical role. Louis, Dretzke, and Walstrom (2010) studied influence while concluding that shared leadership and instructionally focused leaderships are complementary strategies for improving average performance in schools.

As opined by Wagner (2014), the global public schools are expected to make the students academically sound so that they are able to compete on a global basis. The leadership has a great impact on the effectiveness of student learning. Sebastian and Allensworth (2012) stated that the leaders set directions by setting clear directions for the students and establishes high expectations which foster the students to learn in an effective manner. The leader engages in tracking the progress as well as performance of the students and communicates the same to the students (Sebastian and Allensworth 2012). This makes the student aware of their current performance standards and can work upon any shortcomings (if any). The aspect of leadership is important in the classroom

instruction mode and they influence the learning capabilities of a student. The *instructional leadership* encourages on the improvement of the teacher's classroom practices so that they can guide the students in an effective manner that would facilitate learning (Sebastian and Allensworth 2012). The instructional leaders include the teachers, superintendents and even principals who can influence the student learning by making appropriate decisions for them. Avolio and Yammarino (2013) argued that the *transformational leadership* usually focuses on the improvement of the different classroom conditions that would facilitate learning among the students. This may range from the incorporation of learning tools to the unique positioning of the classrooms so that the students are able to learn more in a fixed time period (Sebastian and Allensworth 2012). The decision-making activities of the school are being governed by the participative and the democratic forms of leadership, which has an indirect impact on the student learning process (Cavazotte Moreno and Hickmann 2012).

Transformational leadership means good heads can play important roles in education. They can transform schools. They can change context, vision, organizations and performance of the schools and students. Effective leaders can change struggling schools to exceptional schools. They work with others, stimulate individuals, don't impose them and they support and encourage their organizations and individuals. Schools are required to improve the results of the students. They are required to evaluate the outcomes to set challenging targets for the students. Effectiveness of schools can defeat the effects of social inequality. Leadership has a small indirect impact on the outcomes and performance of students. Another result from this case study is that leadership plays very important role in transforming schools and changing the context. The study concludes the government should assume a strongly positive relationship between school leaders and students' outcomes and performance. A good approach based on qualitative conception of student success is needed immediately (Barker, 2007).

Some studies such as (Seashore Louis et al, 2010) conclude that Leadership styles, strategies and behaviors are main elements which are focused by experts. Leadership behaviours make differences in schools. Leadership variables are completely related to student performance. It also suggests that both shared and instructionally focused leadership are complementary methods for developing and improving schools. It concludes that the effects of leadership on student performance are mainly indirect.

A study by (Leithwood et al, 2010) tests and examines the influence and effects of leadership on student learning and performance. The variables represent leaders' effects on student performance. The participants are principals and teachers. The online survey measures and tests teacher practices in the schools. The study discussed four paths of influence and effects on students' performance and learning. These paths are rational path, emotions path, organizational path and the family path. The rational path means knowledge and skills of all staff at school. The emotion path means feelings and affective states of staff. The organizational

path means features of school and interactions among staff while the family path means the impact of family on student learning and performance. Also, this study discussed a new conception of leadership and its effects and influence. This new conception means that the leadership is an exercise of influence on school and student performance. Leadership has observable and great influence on the organizational path and less influence on the family path. Only 43% of variation in student performance was explained by the Four Paths model.

A study by Schacter (1999) tested and measured the impact of using modern technology on students' performance and outcomes. This study examined the impact of the Harvest Park Middle School's laptop immersion program on the performance and outcomes of students. The participants are about 259 middle school students. School leaders are looking for instructional uses of modern technology to enhance and support teaching and learning. They want new ideas and thoughts to help them improve the quality of teaching and learning to compete the standards of the world. This study showed that the students who participated in that program had higher performance in the most subjects than who didn't participate. The participants in the laptop program have significant impacts on their grades and outcomes. Using laptops and technology will help positively to improve performance and outcomes of students. It is an important tool for developing skills and grades (Schacter, 1999).

Comparing and contrasting between the transformational and instructional leadership and between the five leadership styles, you will figure out that if leaders focus their efforts, relationships, skills and knowledge on teaching and learning, more and effective impact will be on performance and outcomes of students. This will help to enhance and improve the role and impact of school leadership on the performance of students (Robinson et al, 2008)

Some studies focused on the quality of teachers. (NSUBUGA, 2008) concludes that there is a need for professional development and training for principals and teachers to get knowledge and skills of leadership to help them improve the performance of students and schools. Without the development of management and leadership, it will be no positive impact on performance of students and schools. Qualified staff with knowledge and skills are essential for positive relationship between leadership styles and the performance of both schools and students. Also, another result is a visionary leadership is highly required for effective school improvement and performance.

A study by (Flanagan and Jacobsen, 2003) analysed the integration of technology in schools and to make a framework for school leaders which has new leadership responsibilities and skills. This study discussed in general the integration of technology in schools and the barriers of this integration. After that, it presented some successful integrations in some places and their benefits.

According to Thoonen *et al.* (2012), the 21st century's students' performance can be of two types- *qualitative aspects* and the *quantitative aspects*. The quantitative indicators may range from grades of the students including monthly, quarterly and annual grades. The qualitative indicators of the student performance include the performance in the extracurricular activities, public speaking attributes, behavioral attributes and others. Cavazotte Moreno and Hickmann (2012) argued that the *personality traits* such as team work, collaboration and problem-solving are important dimensions of student performance. The teamwork is identified as the most important skills of the students which would help them in both academic life as well as in future professional life (Sebastian and Allensworth 2012). The students are expected to demonstrate their abilities to function in multidisciplinary teams. As stated by Nancarrow *et al*. (2013), the concept of team work is dependent on the attitudes, processes, skills and knowledge of the students, which would help them to perform well in a group work. The development of the team work capabilities is fostered by the instructional practices like "cognitive apprenticeship method" which is an amalgamation of the explanation, modelling and practice in relevant context. Teamwork is considered as a working environment in which metacognition and reflective practice are vital (Cavazotte Moreno and Hickmann 2012). It is important for the students to understand the effectiveness of team work and practice the same so that they can adopt practices of self-regulation as well as self-monitoring in their respective teams (West 2012). The aspect of team work is important since it increases the productivity of the students and would help them in increasing their professional goals.

As defined by Levi (2015), collaboration is an integral component of teamwork and it is defined as the process of working together in groups so that an objective is fulfilled. The students should have collaborative skills that would improve their academic performance (Cavazotte Moreno and Hickmann 2012). The sharing of responsibilities would imply that the students would be able to perform different kinds of roles and develop suitable strategies for action. These skills would help the students to perform collective decision making as well as well perform tasks based on the objectives of the organization. If the students are able to imbibe these skills, then they would be successful in their future professional endeavors too. Hwang Wu and Chen (2012) argue that the students need to have problem solving attitude for gaining the best performances. It is important that they improve their analytical ability and lateral thinking so that they can perform their tasks in a better manner (Cavazotte Moreno and Hickmann 2012). The students should have skills like persistence and logical reasoning which would help the students to solve critical business issues and be self-sufficient. This would also make them take initiative in their academic as well as professional life.

It is clear from literature that school leadership has major influence on achievement and performance of students. There are some effective styles and

strategies which are used by school leaders in order to increase and improve the performance of students. The findings in literature are foundation for this research. They are needed to build a framework for a school leadership to be a guide for positive practices in schools.

Methodology

The methodology for this research includes using the findings from a case study in a school in AlAin City and a subsequent review of literature to identify best practices that school leadership can apply in order to improve student performance.

Case Study: In the case study, data were collected from one school in ALAin city in the United Arab Emirates. It is a boy school. It has grades from six to twelve. The school has more than 950 boy students. Students are from different Arab countries. It is in the centre of AlAin City. It is near Oman's border so most students are from AlBuraimi City which is in Oman near AlAin City.

The school has one local principal and two vice-principals. One vice-principal is Emirati while the second one is an academic vice-principal from the USA. They have enough experience in leadership because they work in schools in leadership for more than fifteen years. Therefore, they are experts in leadership.

This study used two methods. Face-to face interview and school observation are used as methods in this study for collecting data from that school.

The academic vice-principal who is from the USA in that school was selected to be interviewed because he has worked in different countries so he has different and enough experience in leadership. I asked him different types of questions. Questions mainly focused on three parts or groups. Group number one searches answers for strategies and practices of leadership while group number two looks for answers about using modern technology effectively in schools. Group number three focuses on performance and achievement of students. The vice-principal answered happily all questions.

The second method was school observation. Some classes, teachers, students and school leaders were observed for collecting some data from this school. School observation mainly focused on professional development in school, implementing modern technology, performance of students and practices of school leadership. During school observations, a lot of notes were taken about those topics.

This methodology has resulted in the development of a framework for school leadership and recommendations for improving student performance and outcomes.

Literature Scan: Best practices in leadership were identified in current journals, empirical studies and articles. From these, a framework was developed to assist school leadership to have positive actions and practices in order to support and develop the performance of students.

Findings in the Literature

There are some important recommendations have merged from the

case study. First one is more studies are needed in this issue to find the amount of effects of using technology on performance of students. That means to identify leadership practices that support technology use in the UAE schools because most studies and researches are conducted around the world so we need some in specific cities in the UAE. School leaders prepares teachers and students to use modern technology in classroom practices to enhance and increase the achievements. School leaders work harder in order to optimize the performance of students. They make school plans, professional development and training in order to encourage students and teachers to implement technology in classroom practices. For example, when teachers prepare lesson plans they have to include integration of using technology in their plans. School leaders also work harder to make technological resources available in their schools. They communicate with their community for more support for their schools. All school leaders and teachers should work together to study the barriers and challenges of implementing modern technology in the UAE schools. After that, they should try to overcome them and find solutions for better results and performance. They should also communicate with stakeholders to find better practices and use of technology in schools. In addition, some applications which agreeable with culture, traditions, environment and abilities of students should be developed. For example, some applications which always make students active, creative and initiative are highly recommended in the UAE schools. In the UAE, there are not enough and new studies about using technology schools so more studies should be developed to meet the objectives and goals of the ministry of education.

In some studies such as (Waters et al, 2003) there is a guidance such as a balanced leadership framework which guides daily school leaders to what to do and types of practices, skills , tools and knowledge which should be used in order to improve students' achievement. It builds a framework for school leaders to guide them for implementing their visions, goals, knowledge, skills, plans and professional development in order to integrate technology successfully. This framework is a guide for daily technology leadership at schools. Therefore, this framework is a model for positive actions for school leaders. In this framework there is a program which identified some essential responsibilities for leaders in order to integrate ICT, achieve their goals, improve their school performance and enhance and support teaching and learning positively. Also, professional development should be included different areas which need more focus and improvement in order to support different areas of teaching and learning. In addition, school leaders have to follow and check if their followers apply and use what they have learnt in classrooms or not. They have to make good plans with collaboration with their followers and evaluate the plans every specific period of time to check if the plans are effective and successful or not. School leaders have to create a supportive environment in their schools. That means they should make and create a strong community in their schools. This community depends on strong relationship

between all staff in the schools. They have to be leaders not administrative. They have to be models. They have to do things in front of their followers before they do them.

We also need to understand and know what techniques and practices school leaders can use to facilitate change and transformation for areas of improvement. One of these techniques is using technology in teaching and learning. Smart technology creates a suitable educational environment in classrooms (Weber, 2010). Some studies concludes that technology should be considered as an important and necessary factor in planning and designing classroom environments (Delen et al. 2011). Using ICT at home and school is a strong predictor of high performance and achievements in science and math. Positive changes are required in curriculum in order to support and improve the performance of students. This study also explains the importance of technology in increasing students' performance and achievements. Another study (Schacter, 1999) tested and measured the impact of using modern technology on students' performance and outcomes. It examined the impact of the Harvest Park Middle School's laptop immersion program on the performance and outcomes of students. It showed that the students who participated in that program had higher performance in more subjects than the students who didn't participate. The participants in the laptop program have significant impacts on their grades and outcomes. Using laptops and technology can help positively to improve performance and outcomes of students. It is an important tool for developing skills and grades. School leaders in most schools in the United Arab Emirates are looking for instructional uses of modern technology to enhance and support teaching and learning because the government and stakeholders focus on this issue. They want new ideas and thoughts to help them improve the quality of teaching and learning to compete the standards of the world. The second technique is to focus on effective professional development for teachers. Serhan (2007) studies effectiveness of effectiveness of an educational technology training in the United Arab Emirates. It showed that the school leaders get a lot of benefits from professional development. They had positive attitudes toward using technology in their schools. Professional development motivated them apply and use modern technology in their schools. Principals learned a lot from professional development and they want to see positive effects on the performance and outcomes of their schools. This study figures out that school leaders don't have information about using modern technology effectively in their schools. Professional development helps them to get enough information about using technology effectively. It persuaded them to implement it widely and effectively in their schools. Therefore, professional development is recommended highly for school leaders in order to get the best practices, skills and information about helping their schools, teachers and students. This study indicated that professional development is very important for school leaders who are decision makers in their schools. Therefore, the ministry of education in the United Arab Emirates developed a ten-day program for school leaders in 2004. The objectives of this program are to know teaching and learning

resources, using different resources and to integrate educational technology effectively in schools. The third technique is distributed perspectives on leading practices. (Spillane et al, 2001) divides practices of school leaders into two categories which are thinking and activity. These two categories are presented in the interaction of school leaders, their followers and the situations. The distributed leadership perspective has indicators for efforts to develop and improve the effective activities and practices of school leadership. This study makes a frame for school leadership to use different styles and strategies in order to get the highest performance and outcomes of teachers and students. This frame provides tools, activities and skills for school leaders to help them think and apply the best practices and activities in their schools.

It would be correct to say that teachers are the building block for any society. It is important that teachers should be learned and well educated so that they can impart the same education to students. The industry is changing and teachers have to often work under the frequent changing parameters. Therefore, it is important that teaches must have a plat to continuously upgrade their knowledge. The professional development of teachers is an integral part of teachers' self-development. Gonzales & Lambert (2014) argued that the development of students directly depend on the skills and knowledge of teachers. Hence, it would make sense to have a professional development plan for teachers in place. It is also important that the professional development plan for teachers should be flexible enough to change with the change in internal or external parameters. The professional development plan for teachers should focus on both internal and external factors. The internal factors would include the motivation level of teachers, the exposure of teachers, etc. The external factors would include the vision of the organizations, role played by teachers, etc.

Van den Bergh & Ros (2014) highlighted that professional development of teachers can happen only when the organizations have a training and development plan in place. It is recommended that there should be a training and development plan for teachers. The training and development plan should be followed by an assessment. The assessment would ensure that the professional development plan for teachers is able to meet its goals and objectives. At the same time, it is important to mention that developing and implementing of training and development plan is only aspect of professional development plan for teachers. The second critical aspect is the participation from teachers. The training and development plan under professional development plan for teachers would not be able to achieve its objective if teachers are not motivated to participate in the training programs. Therefore, it is important that teachers should be motivated to participate in training programs. There could be various ways to keep teachers motivated. Gregory & Allen (2014) highlighted that the participation in the training and development plan should be linked with the monetary benefits. When it comes to motivation, monetary benefits always attract people. Therefore, it would make

sense to keep teachers motivated through monetary benefits.

Stewart (2014) argued that the ultimate objective of colleges is to increase and optimize students' performance. The performance of student, in turn, depends on the knowledge and education impart to them. It is correct that self-learning and self-development is an important part of self-development. However, the knowledge and education imparted to students in colleges and universities is also critical for student development. The quality of education and knowledge that is imparted in the colleges and universities depends a lot on the skills and competencies of teachers. Therefore, it is recommended that efforts should be made to continuously improve the skill level of teachers. There could be traditional or contemporary method of skills and competencies development for teachers. It can be said that the approach of professional development is more of a contemporary or modern approach of professional development (DeMonte, 2013). The approach of professional development should also focus on understanding the current status of the skills and competencies of teachers. The plan for development should be based on the current skills and competencies of teachers. It is also important that the professional development plan should be flexible in nature. It means that there should be provision of change in the professional development plan.

Gamrat & Zimmerman (2014) highlighted that the implementation of professional development plan would be successful only when teachers' involvement is high. It is recommended that teachers should be involved from start to end. The input of teachers should be collected while developing the framework for training. The inputs of teacher at the initial phase would also ensure that the motivation level of teachers remain high. One of the ways to make professional development plan successful would be to take feedback from teachers at regular time interval. The feedback should be used to bring further improvisations in the professional development plan. It is recommended that the feedback should be documented in the system so that continuous improvements could be made in the professional development plan.

Analysis

There is a necessary framework to develop from this study. A framework for leadership practices to support technology use in classrooms to improve student performance and 21st century skills is needed strongly in the United Arab Emirates. This framework is a guide for positive actions for school leaders. It is for daily technology leadership practices at schools. It is summarized in the following table.

A framework for technology leadership practices at schools

Goals	activities	Evidences or indicators
To Develop students' 21st century skills and abilities such as teamwork, using technology, collaboration, solving problems, creativity, inquiry and investigation	Visit other schools to see how they use technology effectively, focus on professional development to improve all skills, they should be included in daily lesson plans, department plan , action plan school improvement plan	Outcomes and performance of students, increased implementing ICT in classroom activities
To Motivate teachers to use and implement technology in classroom activities	Improve teachers' skills of integrating ICT effectively in classrooms and reward teachers who integrate technology effectively	projects which mainly depend on using technology and improving performance of students
To Develop teachers' skills of using ICT in classrooms practices	Training and professional development	ICT should be included in all plans, visiting teachers in classrooms to check if they apply and use what they have learned in professional development or not
To share school plans and vision with community and teachers	Involve stakeholders, teachers and parents when you make school plan and vision of the school	Communication, participation and support from parents, community, stakeholders and teachers are increased highly
To have more support from the community for implementing modern technology in schools	Workshops for parents and organizations and invite them to visit schools and to participate in making decisions	Having more sponsors from the community to support school financially to buy new devices
To provide access for all technology resources	Included in school and action plan to buy new devices	All teachers and students are able to access all resources that they need
To encourage students to use educational technology at homes to improve their skills	More projects and assignments to be done at home with their parents and reward students who do perfect works	Increasing achievement and results of students

Recommendations

There are some important recommendations have merged from this study. School leaders have to evaluate every goal after specific time from applying it to see the differences and to see if it works effectively or not. If it doesn't work effectively, they have to modify it according to the circumstances and situations. Also, there is a necessary need for leadership research and practice to be on connected to the effective impact on teaching and learning. School leaders should regularly use the framework in this study for technology leadership practices at schools because it is a guide for positive actions for using modern technology in their schools. It helps them to save their time and know what to do in order to use modern technology effectively and successfully. Moreover, professional development is highly recommended in schools. It should be a clear plan for professional development. The main goal of it should be increasing the performance and outcomes of students. After making a plan, it should be an assessment plan to check if it is successful or not. All plans should assessed regularly to modify it if it needs or not. Stakeholders should give more care for developing school leadership in schools.

Conclusion

It is clear that school leadership can transform schools from bottom to the top by the styles and strategies they use. It is the main key in improving and developing education in any country. Styles and strategies of school leadership can make great differences in any place. Professional development and modern technology have great impact on performance of students. No one can ignore the role of school leaders in making observable changes in any school by following and using different methods, strategies and tools.

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ABSRACTS

Cognitive aspects in disruption to facilitate learning

Dr. Marie J. Myers - Queen's University

The new tendencies in a number of domains, for example graphic design, aim at including disruptive elements to draw attention. Perhaps in today's society that has developed rapid eye movement, such features are beneficial in visual perception and message decoding. We will present findings of a theoretical study on the latest research in visual perception, based on cognitive aspects involved. For smart learning it is crucial to revisit ways of assimilating elements in visual cognition in today's context (Kosslyn, 1995; Pashler, 1995; Farah, 1995, Biederman, 1995; Goodale, 1995; Kowler, 1995).

We will also present, and elaborate on, the latest features in innovation that tend to push beyond the rules in order to move ahead and make things more noticeable. To support the discussion, examples will be taken from innovative strategies recommended in graphic design (Samara, 2014).

Key words: assimilating knowledge, innovative strategies, disruption.

Analysis of Peer-Based Learning Effectiveness for Designing Integrated Smart Learning Environments

Sadia Riaz and Arif Mushtaq

In a smart learning environment, learners are able to access digital resources and are provided learning guidance, supportive material and suggestion when they interact with other integrated features on the system [1]. One of the key aspects that requires further deliberation is to understand how peer-based learning can promote positive learning outcome in a virtual environment. Studies report learners often focus on superficial features instead of the underlying principles, concepts, or theories in smart learning environments and sometimes acquire individual skills or piece of knowledge but are unable to apply it in complex contexts, simply because they have not practiced the skills of integration and synthesis. It is believed that students learn a great deal by explaining their ideas to others and by participating in activities in which they can learn from their peers [2]. Therefore, integration of peer-based learning into smart learning environments could be an interactive yet powerful solution. Unfortunately, existing research and empirical evidence is very limited in its depth and analysis to signify effectiveness of peer-based learning for smart learning environments. This research paper, using quasi-experimental design, will examine data on students at Amity University Dubai to determine effectiveness of peer-based learning methodology in smart learning environments. The data will be analyzed using Predictive Analytical Software (PASW) version 2.0. Findings of this study may be helpful for institutions of higher learning who are in process of transition and transforming old models of university education into smart learning systems. While, HCI designers and practitioners may be benefitted in defining cognitive thought processes supported by peer-based learning that trigger learning in a visual environment and relevantly mapping same in interface designing for enhanced learning experience.

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Designing a Translation and User-Experience Research Center for Technology Innovation

Laura Gonzales, Ph.D.

Assistant Professor
University of Texas, El Paso, U.S.A ljgonzales3@utep.edu

Victor Del Hierro, Ph.D.

Assistant Professor
University of Texas, El Paso, U.S.A. vjdel@utep.edu

Ann Shivers-McNair, Ph.D.

Assistant Professor
University of Arizona, U.S.A.

Introduction

This paper will consist of a case study that outlines the design and development of a research center focused on multilingual technology innovation. As three faculty members with training in technical communication, user-experience, language diversity, and technology design, we will present our framework for establishing a collaborative research center that facilitates the design of multilingual tools and technologies (e.g., websites, software, applications) for a wide range of organizations. These organizations include local hospitals and government agencies, nonprofit organizations, and schools. By collaborating with local organizations and by training students to design, test, and disseminate technologies in multiple languages, this research center is a site of "disruptive innovations" that lead to smart learning, both in and outside of the classroom.

Statement of Purpose

We designed Sites of Translation User-Experience Research Center

(http://www.utep.edu/liberalarts/translationux/about/index.html) as a nonprofit, interdisciplinary, community and University-driven resource that supports student development and local community organizations. Developed as a partnership among community organizations, academic researchers, and technology industry professionals, *Sites of Translation User-Experience Research Center* is envisioned as the place where social-justice oriented organizations come to request help in creating and disseminating their bi– or multilingual content (e.g., websites, web applications, informational tools) aiming to meet the needs and highlight the assets of linguistically diverse users. Local businesses and organizations come to this research center to request help in creating and disseminating their bi– or multilingual

content. As faculty members, we pair local organizations with students and researchers who then help to design and test and translate tools and technologies. This collaboration results in the development of tools and technologies that are useful in multiple languages.

Method

This case-study will answer the following questions:

1. How can University faculty collaborate with local organizations to train students in userexperience and technology design?
2. What do University students gain from collaborating on projects with local organizations and businesses?
3. What skills and training do students and professionals need to design tools and technologies that are usable in multiple languages?

We will answer these questions by collecting and analyzing interview, observation, and survey data collected with industry professionals, faculty, students, and community members who have helped us develop our research center. By answering these questions, we will develop and share a framework for other Universities who want to collaborate with local organizations in the design and dissemination of multilingual content.

Results

Our experiential data suggests that University faculty can provide students with opportunities to gain real-world experience by collaborating with local organizations to improve their communication tools and technologies. Students in our case study collaborated with a translation and interpretation organization in Michigan, a hospital and health center in El Paso, and a Technology Center in Seattle, Washington. Through these partnerships, students gained both technical and professional training, as they learned how to conduct research and build relationships with various stakeholders in their communities. We hope to continue expanding our framework for collaboration and to present suggestions for how these partnerships can be paired with the technological innovation taking place at the Innovation Arabia conference and in the UAE more broadly.

Our data also shows that in order to design tools and technologies that are usable in multiple languages, user-experience research must be conducted with various users who speak, write, and navigate information in both original and target languages. It is not enough to simply design websites, applications and technologies in one language and then translate the written content into other languages. Instead, it's important to design technologies with translation in mind from the beginning, and to conduct usability testing in multiple languages with multilingual users who will access and engage with written, visual, and digital information across platforms. Thus, in places with high linguistic diversity such as the UAE, developing partnerships between translators and technology designers may be highly valuable.

Implications and Recommendations

Developing collaborative research centers focused on creating multilingual technologies can increase access to information for multilingual communities.

In addition, building partnerships between University campuses and local organizations can provide valuable professional experiences for students interested in user-experience and technology design.

Key Words: *Technical Communication, Technology Design, User-Experience, Translation*

Analysis and opportunities of the commercialization of the research, in conjunction with technological parks in México.

Said R. Casolco[1], Alvaro Zamudio[1], M. Tecpoyotl-Torres[1] and Marlon Santillán Quiroz[2]

[1]*Instituto de Investigacion en Ciencias Basicas y Aplicadas, Centro de Investigacion en Ingenieria y Ciencias Aplicadas (IICBA- CIICAp). Universidad Autuonoma del Estado de Morelos (UAEM).*
[2] *Instituto Tecnologico de Estudios Superiores de Monterrey - Puebla. Via. Atlixcayotl. 2301, Reserva territorial Atlixcayotl,72453. Puebla, Pue- Mexico.*

Abstract

This study analyzes the relationship and the favorable mechanisms for the development of formal activities between universities and systems conducive to economic empowerment. However, the key piece for the connection lies in specialized human resources and experts in the area of innovation who undertake the task of changing the entrepreneurial culture. This is why a fundamental structure is proposed for the application of linking systems between technology parks and marketing. Science as a source of strategic opportunities is the dominant paradigm that defines science as an economic factor led to innovation and private income. Henceforth should also be promoted more emphatically the paradigm of science as a public good (non-exclusive and non-rival) capable of generating welfare.
The design of these models has allowed that since 2005 to date there are more than 20 parks projects in the system and although there is no parameter to measure their performance, we can say that there is not a similar case documented throughout Latin America.

Keywords: *university, entrepreneurial model, technological park, science*

Innovation and Challenges in Education Reforms – A Study Based on Asian School Systems to Provide Insights for UAE Education System Transformation

By:

Indu Manish Kumar

Research Scholar, Bharathiar University

Introduction

UAE government is taking all the initiatives to ensure for the progress and prosperity the future generations of the country. It sets a good example to the world on how governments need to think ahead and frame strategies in order to face new challenges. The UAE has made a lot of progress toward meeting the 2015 goals set out by Unesco's Education For All Movement. Despite the heavy investments, when the PISA (Program for International Student Assessment) and TIMSS (Trends in International Mathematics and Science Study) results are considered, the UAE needs a revamping of its innovative educational approaches. The rankings also show that Asian school systems dominate the top of the charts.

Though UAE has high literacy rates, have high numbers of enrolment in primary education and secondary education and a good higher-education system, the quality remains a challenge. UAE needs to conduct research on various dimensions of education system and ensure the optimum allocation of its resources. With the help of research, the areas where quality and improvement is needed can be restructured. The present study offers valid insights into the innovations made and challenges encountered by the best school systems in Asia. International comparisons are increasingly relevant and important to understand in today's global environment. A framework is developed to support the school system reformation in UAE.

Statement defining the purpose of the paper/ presentation

The UAE Vision 2021 National Agenda emphasizes the development of a first-rate education system. This will require a complete transformation of the current education system and teaching methods. The uae-centennial-plan-2071 focuses primarily on investing in UAE youth, and working toward making the UAE the best country in the world by 2071. The insights from the practices and experiments of the PISA high performers will help the educational practitioners in the country to conceptualize and reorganize a best school system.

Description of the research method

Exploratory Research method is used in this study. Case study approach is used to collect information about school systems. The results of exploratory research are not usually useful for decision-making by themselves, but they can provide significant insight into a given situation.

Main findings of the study

The study provided a model for the structural reorganization of the UAE school systems. The top-performing systems have established high academic standards and curriculum for a global economy. Teaching and learning are focused on thinking critically, connecting ideas and innovation. Highly ranked systems give a high-quality education to all students, not just privileged few. But still these systems face criticisms for its overly heavy burden of exams, pressure and less focus on the creative and innovation skills of the pupil. It is blamed that instructive teaching and disciplined exams have, failed to produce young people who foster technological innovation or design breakthroughs in engineering. They depend on western countries for technological innovations. Some of these top scorers in PISA and TIMMS remain far behind in the arts, cultural invention, or academic research. PISA testing is also blamed for various reasons like narrowing our collective imagination regarding what education is and ought to be about.

Five or six key words

Education Reforms, Innovation, School systems, PISA, TIMMS, Creativity

Environmental Education through Digital Storytelling in Middle Schools in Dubai

P. Theodorou, PhDc, Senior Researcher of Research Center of Environmental Communication and Education. ptheod@env.aegean.gr

I. Nastoulas, Junior Researcher of Research Center of Environmental Communication and Education. env09062@env.aegean.gr

K.C. Vratsanou, Junior Researcher of Research Center of Environmental Communication and Education. env12011@env.aegean.gr

E.S. Kalogirou, Undergraduate student of Aegean University, Department of Environment. env13030@env.aegean.gr

C. Skanavis, Professor at University of the Aegean, Head of the Research Center of Environmental Communication and Education. cskanav@aegean.gr

In this study, a new approach, that improves environmental awareness, is suggested. Specifically, we propose the creation and the achievement of specific teaching interventions in classes of middle school of Dubai. They concern the use of web 2 tools in order to educate students on specific environmental issues. The latter were used in this research, focusing on digital media storytelling.

Digital media storytelling is the practice of combining narrative with digital content, including images, sound, and video, to create a short movie, typically with a strong emotional component. These stories let students express themselves not only with their own words but also in their own voices, fostering a sense of individuality and of "owning" their creations. At the same time, digital stories give students an opportunity to experiment with self-representation.

Concerning the particular project, three interventions were made in middle schools in Dubai. Each intervention had its own particular topic about environmental aspects. Additionally, measurements of the students' learning took place during the class. These measurements compared what the students knew before in a pre-test and after the application of the tool in a post-test. Finally, the goal was that students of Dubai presented themselves with the aid of multimedia similar information on the same environmental topic. More specifically, students became creators of their own content. Furthermore, the progress of students was noticed with self-assessment recording through personal feedbacks, which were appropriately conducted.

Electronic questionnaires, point out students' scores after the conduction of the course. The aforementioned interventions, when evaluated, present if the set goals promote environmental awareness. It has been found that students cooperate more when learning is administered in a pleasant and interactive way. It is assumed that this success is due to the given possibility of the students to be a part of a learning experience.

Conclusively, the study brings into light gaps in environmental education and awareness taking into consideration the

higher scores on the post-tests after the application of the recommended course. The proposed presentation reflects on these findings, so there is a need for more focused educational programs in schools in order to achieve higher environmental awareness.

Keywords: Environmental Education, Environmental awareness, Digital Storytelling, Middle School Education, Research, Participatory Design

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“Smart” Environmental Education for Special Needs Learners

P. Theodorou, PhDc, Senior Researcher of Research Center of Environmental Communication and Education. ptheod@env.aegean.gr

E. E. Pappa, Graduate student of University of Thessaly, Department of Special Education. epappa87@gmail.com

C. Skanavis, Professor at University of the Aegean, Head of the Research Center of Environmental Communication and Education. cskanav@aegean.gr

Nowadays, technology and environmental awareness are undoubtedly crucial factors, often used as basic tools in order to enhance the learning process for a better, easier and more successful life, for special needs learners. The aforementioned children have already experienced the training in environmental issues via computer using forms of technology such as virtual Reality and multimedia.

The present study is a critical review of the most representative, published scientific literature on the use and connection between Information and Communication Technologies (ICT) and, environmental awareness and education, as well as their applications in children with special needs. In terms of the special needs, in the context of this critical review there will be a diversion in the following categories: 1) Sensory and Motor disabilities: Visually, Deaf and Hearing Impaired children, 2) Generic disabilities: Depression/disruptive behavior, Down syndrome, Intellectual disabilities, Cerebral palsy and Severe/Profound disabilities and 3) Special learning disabilities: Dyslexia, Attention Deficit Hyperactivity Disorder (ADHD) and Autistic Spectrum Disorders.

In this direction, the specific paper was divided, regarding the Special Needs, in three sections: a) ICT, environmental awareness and, sensory and motor disabilities, b) ICT, environmental awareness and generic learning disabilities and c) ICT, environmental awareness and special learning disabilities.

Additionally, some ICT forms which can be used are: 1.Smart and Personalized Learning Designs, 2. Augmented Reality, 3.Gesture-based Smart Learning and/or 4.Design-based Smart Learning, 5. Smart Learning Organizational Behavior, 6. Evaluation of Smart Learning Paradigms, 7. Networking and Cloud-based Learning, 8. Sensory Emotive Learning Spaces, 9. Digital Ecosystems of Learning, 10. Conceptual modelling, robotics.

After an analytic study of the latest published papers, through this paper, innovative/alternative models of “smart” environmental awareness are proposed, aiming to be applied in a supportive and pleasant educational setting. There are also mentioned perspectives for future research concerning the applications of technology in this particular research field.

Keywords: Environmental Education, Environmental awareness, Generic learning disabilities, Sensory and Motor disabilities, Special learning difficulties

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Augmented reality proves to be a breakthrough in Environmental Communication

P. Theodorou, PhDc, Senior Researcher of Research Center of Environmental Communication and Education. ptheod@env.aegean.gr

I. Nastoulas, Undergraduate student of UCL, Environment and Sustainable Development . env09062@env.aegean.gr

T. Koukoulis, Junior Researcher of Research Center of Environmental Communication and Education. env12026@env.aegean.gr

K. Tsamopoulos, Junior Researcher of Research Center of Environmental Communication and Education. mar12074@marine.aegean.gr

M. Botzori, Junior Researcher of Research Center of Environmental Communication and Education. env14084@env.aegean.gr

C. Skanavis, Professor at University of the Aegean, Head of the Research Center of Environmental Communication and Education. cskanav@aegean.gr

With the advent of technological advances that made over the last decade and the leading technology prices down, smartphones are no longer considered hedonic only for the upper class, but rather a daily commodity for about half of the world's population. Environmental education, also being vital to the well-being and prosperity of mankind, especially now more than ever, new and revolutionary ways must be put in place in this area to increase its effectiveness. Hearing and vision work together in the process of learning. The ultimate goal is to create innovative educational practices in future schools in order to boost smart and sustainable growth worldwide. This research activity reflects emerging web science agendas where one can consider Virtual Headset being an obvious embodiment of Web Science in Education. Such teaching methods eliminate distances and make training more comfortable and more interesting.

The aim of this study is to examine whether environmental education through audiovisual stimuli proves to be more effective than traditional media based on the idea that since the student can be an active participant in these events rather than be a passive recipient of the information, to digitize the information better. To achieve this we've created an application that utilizes Virtual Reality Headset technology coupled with a smartphone due to its low cost and accessibility.

A new innovative way to introduce environmental education and promote environmental responsible behavior is through the use of mixed reality, a combination of augmented and virtual reality. By immersing the subject into mixed reality new concepts are introduced in a familiar environment.

In the start, the application recognizes a preset pattern that is used as a trigger to start the Augmented Reality Projection. Specifically, the projection can be viewed directly on the screen using the trigger

picture as a background for the purposes of the given lesson or with the help of a VR headset, the same projection can be used for the purposes of mixed reality, meaning that the user experiences reality only through the screen of his mobile but the 3d projection is blended into his real life surroundings. For a truly immersive experience, the test subject may choose to enter Virtual Reality mode. In virtual reality mode, he is completely cut off from his real life environment and he may experience only a digitally created world, made just for the purposes of the lesson. In this study, augmented reality, mixed reality and virtual reality are created so that the test subject can view a phenomenon from a spectator's point, meaning that he will not be able to change the course of the projection's storyline. As a result he will not be able to intervene directly to the story. Further research can have an enormous impact on Future Learning.

Key-words: Augmented reality, Virtual reality, Ecosystem science, Environmental education, Mobile learning

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Cognitive Tempo and Learner Behavior in Online Learning Environments

Prof. Hamdy Abdelaziz
H.Abdelaziz@hbmsu.ac.ae

Dr. Khadeegha Alzouebi
K.Alzouebi@hbmsu.ac.ae

Hamdan bin Mohammed Smart University

Abstract

In online learning settings, interaction is based on the extent to which learners bond; interact with the faulty and other learners. The interaction process of teaching and learning and peer engagement amongst learners reflects the level of cognitive attainment. Measuring the level of cognitive attainment through learner interactions and behaviour in the presence of technology and in online environments is the purpose of this article. This article indicates that there are behavioural patterns of learner interaction in the various online platforms selected such as wikis, blogs and online discussion forum. From a representative sample of postgraduate learners spread across three online course, we have utilised four prototypical online learning activities (wikis, blogs discussion forums, and online learning communities) which we have analysed for the purpose of understanding and categorizing the cognitive tempo of learners in online environment settings. The influence of learner behviour with technology and the cognitive factors in online environments can be ignored when reviewing the quality of learning and online knowledge creation.

Keywords:

Online environments, collaborative learning tools, cognitive tempo, cognitive presence, learning analytics.

Radar Metro

Ruqiya Ahmad

200104144@hbmsu.ac.ae 0551666601

The purpose of participating my idea in innovation Arabia is to present my new innovation to the important visitors who are coming to support useful this kind of innovation.

Abstract

Radar Metro It's a speed camera that is doing same job of the current Radar. But new features and technics are added. Radar Metro could be built on long roads, whether Shaikh Zayed Road or Mohammed Bin Zayed Road. Video camera recording 2 sides (in front and the back) on the top (to record 24 hrs, what is happening around). Therefore, Police office can watch what is happing outside, they can control the Radar by moving around. To be aware the reason of the traffic and trying to catch some cars by electronic plate number and policemen while they are in their offices, can issue fines (who crossing illegal way or passing other cars or issuing fines to whom who forgot the seatbelt, or illegal stickers.

The camera could be worked by Remote or by Computer system and the major reason of this new design, to use the Radar in the opened roads while other part of the streets are crowded. Implementing the new design in UAE will be the first country who started this creative idea. This new machine will save time of policemen, RTA and driver's lives.

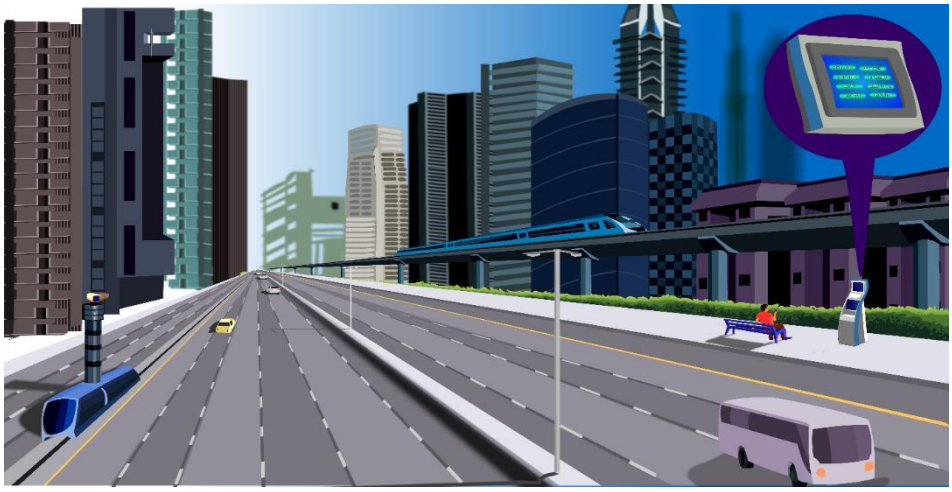
Mostly we find in the roads, policemen standing on the street to capture people who are exceeding the limit speed. Which affects more crowds and waste more time. Although some drivers memorized and recognized the place of Radars, when they reach closely to the Radar, they drive slowly, which is going to affect the cars who are behind them. The value of Radar will be reduced.

This innovation will be presented by using animation video and presenting a big electronic plate car number to present along with another idea and feature which can be added while having Radar Machin. I recommend that while presenting this innovation a big screen to be available in the background to attract visitors. This idea was presented to his highness sheikh Mohamed bin Rashed last year, he was one of the people who recommended seeing the video finished. Also, the idea was presented in newspaper. Where a similar of the idea stolen before it gets registered in economy ministry for copy right property. However, ministry of economy have approved this innovation under industrial property.

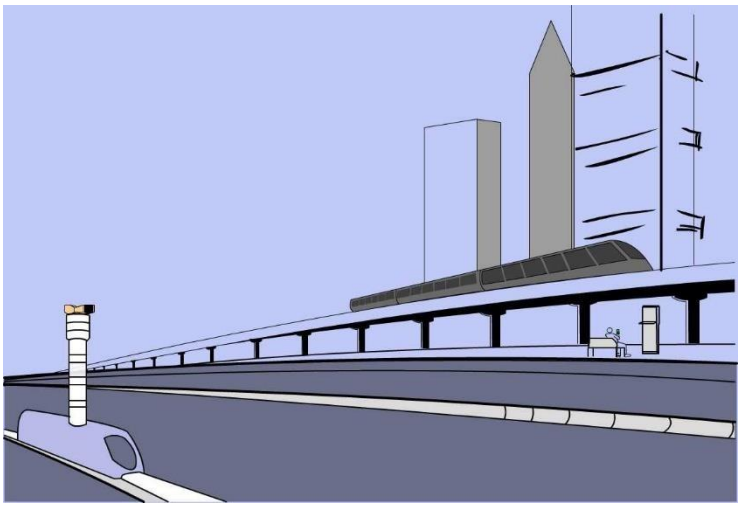
- Rader Metro can easily identify wanted car by smart plate number.
- Dubai Police can easily get information where the car is heading to, if the plate is electronic.
- Smart Plate will facilitate for police officers to know the exact location for the car. And know which last direction was taken or been through. Which makes easier to identify the last location driver had driven through especially if the car was stolen.

- Radar Metro new technic which never exist in the world yet
- Radar Metro could be located in some streets first to test the result before implemented in the main roads.
- Radar Metro will make life easier for policemen and will provide faster help for drivers incase anything occurred.

Ruqiya Ahmad 200104144@hbmsu.ac.ae
0551666601



A clear video can be shared if the idea still not clear



Opportunities and Challenges of Mobile Learning that University Students Encounter in the UAE

Dr. Ghadah Al Murshidi

UAE University

G_almurshidi@uaeu.ac.ae

00971559195428

ABSTRACT

This study presents preliminary results based on a survey administrated to a sample of 400 students enrolled in undergraduate courses offered at a Higher Education Institution in the United Arab Emirates (UAE). The paper examines opportunities and challenges university students face when instructors introduce "structured" mobile learning in higher education. In part, this article presents qualitative findings of the larger study involving a subset of the sample, to gain in-depth data. Closed-ended and open-ended questions probed students' experiences and perceptions about the use of mobile devices in academic work. Findings reported in this paper focus on students' perceptions on opportunities and challenges. The analysis revealed that a majority of students used iPads, cell phones, and laptop computers to study anytime and anywhere. Respondents reported that these technological devices enabled students to meet deadlines faster than students without mobile devices. In addition, students indicated that they faced difficulties accessing Internet networks in most places. This phenomenon has afflicted students' productivity and efficiency levels, since most academic work required Web searches and Internet connectivity. Nevertheless, students benefited a great deal in using such mobile technological devices and admitted that the benefits outweighed the challenges they encountered.

Assessing Creativity in the Classroom – UAE

Isra AbuZayed

[1] Interior Design, Faculty of Fine Arts and Design, American University in the Emirates, UAE, isra.abuzayed@aue.ae

Extended Abstract

With much ambiguity on the notion of creative assessment this study aims to clarify the assessment needs for creative education in the United Arab Emirates. To be utilized in higher education institutes with adult learners with special interest in design education, in the United Arab Emirates. Utilizing a positivists (realism) approach to be able to determine the necessary reform required for creativity assessment through the content analysis of a) relevant literature review, b) review and analysis of two program accreditation bodies, the first is the United Arab Emirates Commission for Academic Accreditation (CAA) and the second being the North American Standard for Art and Design (NASAD).

Literature Review

Through the first part of the literature review a closer look at creativity was established to understand what creativity is and how it is scientifically viable in society. Glaveanu (2010) argued that creativity is part of our existence as individuals and it is part of our integration with one another in society. Although creativity was traditionally looked at to be out of the ordinary and a divergent from the norm. In addition to being part of our process and our human interaction with one another Korpoca et al, (2011) determined that creativity is a vital skill in today's competitive landscape. Creativity allows students to work better with one another and develop emotional intelligence through empathy (Bailey et al, 2005). Researchers have developed findings which are in support of the integration of creativity into our society and its benefits on the person's overall mental state.

Teacher's understanding of creativity was explored in 2014 in a study which concluded that their views were not in unison. Therefore, without a true and paralleled understanding of creativity it can be a great challenge to attempt to dispel it onto students (Lucas 2014). On the other hand, alternative research looked at how adults can continue to learn to be creative even at an older age. Creativity is not limited to children or adolescent as is most commonly thought (Tsai 2013). And when tested creativity can be proved as a means which can be increased as seen in in a research conducted (Korpova 2011) where four educators attempted to measure student's creative abilities through conducting a creative exercise and measuring their creative abilities with a Torrance Test of Creative Thinking (TTOCT). Concluding that although societal ideas determine that creativity is a 'nature' concept, it can be 'nurtured' and is proven through the research findings. The findings concluded that the undergraduate students from 5 different lectures show a growth in creative measure after the creative exercise was administered to the student body.

When attempting to identify the needed assessment to evaluate creativity there is a lack clarity in the process as well. Arts and design majors face great difficulties in their assessment process as their biggest challenge is related to assessment of

creativity. Defining the challenges as linked to pedagogical dimensions, unclear strategy or vision, and lack of framework for the educations. These three elements create an unstructured and unclear pathway for both educators and learners to follow. Additionally, the assessment of creativity is not limited to that of the creative majors of studies, as seen in Zemits (2015), creative assessment has now become a necessity in the humanities fields as they are slowly integrating the creative learning process in to their educational journey as well.

Smith (2016) looked at the utilization of rubrics to measure creativity. Stating that rubrics with a clear 5-point grade scale and a clear definition for each level of achievement allow the students to visualize their projected goals and enable the educator to develop a close to objective evaluation of creativity. The study stated that creative assessment can never be entirely object as that of science or math, but rubrics can achieve the closest measure. Some studies show that the impact of attempting to test or assess creativity results in students minimizing their creative abilities as they are aiming only to please and attain correct assessment (Shalley 1995). Whereas more recent research (Hennessey, 2003) has shown that when assessment is introduced learners are more motivated to perform on a higher level and achieve greater levels of creativity. Therefore, there is a need for the development of rubrics which meet the above requirements.

Overall the literature showcases the fragility of the definition of creativity in our society and the understanding most people have regarding the ability to attain creativity. Additionally, it also reflects that creativity can be a gained attribute. Assessment of creativity can be conducted through a rubric of a 5-point grade scale breakdown, allowing the student to understand the objective of the project. But with the use of flexible terminology which can also encourage student creativity and stray away from the limitations of concrete assessment methods.

CAA and NASAD Standards Review

The UAE CAA standards is utilized as a general measure of undergraduate and graduate program structure and delivery. Allowing little to no input on the importance of creativity, creative evaluation or its integration in to the learning process.

The NASAD standard however, due to its focused art and design vision places great emphases on the evaluation of creativity in a systematic approach. Stating that regular assessment of creative output is needed to ensure the student is allowed reflection on their output. Additionally, the means of evaluation and its effect on the creative output is considered. The evaluations are meant to empower and guide the student learner towards their creative outfou.t Therefore it is necessary to consider that the feedback is clear and concise to allow the student to move forward independently.

The above guidelines fall in line with the need to create a framework system for the creative output which can a) allow them to understand their required tasks and how they will be assessed b) give necessary feedback to the student c) encourage them to move forward independently, all without limiting their creative abilities through assessment restrictions

Conclusion

Through the above, students should be able to achieve independent creative development with regular evaluations to help guide their creative journey. The three

major conclusions where established from the literature review and the content analysis were as follows:

1- The literature highlights the lack of clarity of the word creativity which in turn leads to difficulty in teaching it.
2- Creativity is a learnt skill which can be achieved in adulthood through practice.
3- Creativity can be assessed with much care as to not disturb the creative process. This can be done using a 5-scale grading rubric. Allowing for a general guideline of the project output or objective. Rubrics must stray away from restrictive terminology which can limit student creative ability. Objective of the rubric is to:
    a. Allow students to understand their required tasks and how they will be assessed
    b. Give necessary feedback to the student
    c. Encourage students to move forward independently

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2. Appendix A

CAA Standards for Licensure and Accreditation 2011

INTRODUCTION - STANDARDS FOR 2011

Higher education in the United Arab Emirates continues to evolve in terms of its diversity, the numbers of institutions and programs, and the quality of education available to students. The Commission for Academic Accreditation (the Commission or CAA) is committed to maintaining the rigor of its Standards for Licensure and Accreditation (the Standards) while respecting the diversity of educational provision and encouraging innovation and creativity in educational strategies.

This new edition of the Standards gives more attention to internal review mechanisms, branch campuses, student transfers, and coordination between campuses. With increasing international mobility of students, it is essential that recognition of qualifications is underpinned by a robust national system of institutional licensure and detailed program accreditation, resulting in qualifications of a high quality and standing in the international community. Community engagement is recognized as an important activity in higher education institutions, and so Standard 11 has been added to address this important link with UAE society and the mutual benefits that can be derived from effective relationships with the community.

The Commission remains committed to its mission – ―to promote educational excellence across diverse institutions of higher learning in the UAE. Through licensure of colleges and universities, and accreditation of individual programs, the Commission strives to assure high quality

education, consistent with international standards".

PROCEDURAL GUIDELINES

As many of the licensed institutions in the UAE are maturing, it is possible to separate out the Commission's review procedures for institutional licensure and program accreditation. In order to guide institutions in the preparation and documentation required for these two distinctive reviews, the Commission has developed a set of Procedural Guidelines linked to the Standards and designed to help institutions prepare for these separate processes.

The following four Procedural Guidelines are available through the Commission in hard copy and on the CAA website http://www.caa.ae:

Initial Institutional Licensure (IL)
Licensure (L) and Renewal of Licensure (RL)
Initial Program Accreditation (IA)
Accreditation (A) and Renewal of Accreditation (RA)

PRINCIPLES OF LICENSURE AND ACCREDITATION

In the United Arab Emirates the authority to license non-federal educational institutions to grant degrees and other academic awards, and to accredit the programs of all institutions, rests with the Commission for Academic Accreditation within the Ministry of Higher Education and Scientific Research (the Ministry). Any institution located in the UAE that provides regular, theoretical, practical, or applied curricula of one academic year or longer beyond the UAE Secondary School Certification (or the equivalent), and that lead to an academic degree, certificate, or diploma, must be licensed and have its programs accredited in order to be these quality assurance processes. The Standards that guide these processes and the criteria that institutions must meet are specified in this publication, available both in print and on the Commission's website (http://www.caa.ae).

The Standards for Licensure and Accreditation (2011 edition) provide the threshold requirements that an institution must meet for licensure, the renewal of licensure, for accreditation and the renewal of accreditation. For some of the Standards, there are Stipulations that provide greater detail as to the expectations that the Commission holds for licensed and/or accredited institutions or programs. These Stipulations carry the weight of the Standards themselves and, when called for through either the process for licensure or accreditation, the Stipulations must be adhered to.

The standards, policies, and procedures adopted by the Commission to establish and operate institutions of higher education and to accredit academic programs are designed to promote high quality institutions and to assure prospective students, their families, employers, and other interested parties that licensed institutions meet standards of quality consistent with current international practice and professional judgment. Licensed institutions demonstrate that they adhere to standards of performance covering all aspects of the institution, follow principles of continuous improvement, and provide evidence of student learning.

Licensure applies to the entire institution and all its activities. In order to be licensed, the institution must meet eleven Standards and their criteria that cover all major activities. The licensure requirements and the Standards specify a number of documents for institutions to develop and keep current for various audiences. These documents and the requirements for their contents are described in the Stipulations

later in these Standards, and referred to in the relevant Procedural Guidelines.

Criteria for each of the eleven Standards determine whether the institution fulfills that standard, and each criterion must be met to achieve licensure. The second section of these Standards, Quality Assurance, relates to all other Standards and is at the heart of the Commission's determination to assure and enhance high quality.

Licensure signifies that the institution has a mission appropriate to higher education and possesses the governance structure, by-laws, regulations, policies and procedures, physical and financial resources, academic programs, faculty and other personnel, and quality assurance measures sufficient to accomplish its mission. Initial Licensure (IL) is granted for up to five years. The process of Initial Licensure is designed to ensure that robust plans are in place to provide human and physical resources in a timely manner, essential policies and administrative structures have been developed such that programs and support units will function effectively, and the financial basis of the institution is sound. Much of this process is based on detailed documentation and plans submitted by the institution.

After the period of Initial Licensure, an institution must apply to renew its license. A self-study is required. A review for Licensure (L) will evaluate the institution's performance in meeting the Standards during its period of licensure, and will require clear, detailed evidence and appropriate documentation that the institution is accomplishing itsmission and offering and delivering academic programs of high quality, consistent with current international practice. Renewal of licensure (RL) is required every five years after Licensure is granted.

year applies to any combination of programs or courses of any duration, if they yield the equivalent of a program of one academic year or longer. Licensure and Accreditation

A licensed institution is required to identify its status as licensed by the Commission in all documents and advertising, and to comply with the Commission's requirement for reporting data annually.

Only after being granted Initial Licensure (IL) may an institution apply for Initial Accreditation (IA) for an academic program. Initial Accreditation must be obtained before the institution may advertise that program and recruit and enroll students. The review for Initial Accreditation is designed to ensure that a fully developed curriculum is in place, and with assistance from visiting international experts in the field (the External Review Team or ERT), the Commission evaluates the constituent courses and their requirements for specialist faculty and appropriate teaching and learning resources. After the program has graduated its first cohort of students, further reviews for Accreditation (A) and subsequent Renewal of Accreditation (RA) require a critical self-study and a further assessment by an ERT to ensure that the program's anticipated outcomes are being achieved.

UAE QUALIFICATIONS FRAMEWORK

In its activity of program accreditation the Commission has always worked to ensure that academic programs are appropriate to the level of the qualification, be it certificate, associate, bachelors, graduate certificate/diploma, masters or doctorate. This is currently judged by international experts in the fields of study. This approach is to be further enhanced by the introduction of the UAE Qualifications Framework (UAE- QF) which is to be published and disseminated to the educational

community. The UAE-QF will give more transparency to the possible pathways for students to progress from one award to the next across the spectrum of qualifications in post-secondary education and vocational training. Institutions will be expected to design, deliver and review their programs of study in accordance with the UAE-QF's descriptive criteria associated with each level of the qualifications framework.

INTERNATIONAL QUALITY ASSURANCE

The Commission conducts its review procedures with reference to the Guidelines of Good Practice of the International Network for Quality Assurance Agencies in Higher Education (INQAAHE), the Guidelines for Quality Assurance from the European Association for Quality Assurance in Higher Education (ENQA), and the common core standards for quality review endorsed by the Arab Network for Quality Assurance in Higher Education (ANQAHE).

Institutions with licensure and program accreditation awarded by the CAA may also seek accreditation from international professional associations, and affiliations with overseas institutions are commonplace. The number of branch campuses established in the UAE has also grown in recent years. In the interests of international alignment of standards and to increase efficiency, the Commission is increasingly working with overseas institutions, accrediting agencies, and professional associations to conduct joint/concurrent reviews.

Appendix B

NASAD DOCUMENT
THE ASSESSMENT OF UNDERGRADUATE PROGRAMS IN ART AND DESIGN

J. Evaluations

Evaluations take place throughout the undergraduate program. Obviously, there are evaluations of course work, projects, and exhibitions. This section is concerned with the undergraduate program's overall approach to evaluation and, specifically, with summary evaluations such as comprehensive reviews.

1. What is the institution's established philosophy with respect to evaluations at various points in each undergraduate program? How does this philosophy relate to the purposes and goals of the undergraduate program as a whole, and to the goals and objectives of each curriculum?
2. To what extent does this philosophy cover both the content, timing, and level of expectations of evaluations?
3. What is the content of evaluations? How does this content relate to the goals and objectives of each undergraduate curriculum? How is this content related to admission, retention, advisement, and course requirements?
4. How does operation of the evaluation system contribute to the artistic and intellectual climate desired by the undergraduate art/design program?
5. How does the policy for evaluations encourage and assess the development of individual skills and creative approaches to disciplinary subject matter? To

what extent do such reviews indicate an individual's progress toward independence as a creative artist, practitioner, teacher, researcher, or scholar?

6. To what extent do evaluations assess the integration of knowledge and skills gained through discrete course work and other experiences?
7. To what extent does the evaluation system assess comprehensive acquisition of knowledge and skills consistent with the objectives of the undergraduate program and any areas of specialization?

Innovative Curriculum Reforms: Toward Professionalization of Pre-Service Teacher Education

A Conference Paper Submitted to Innovation Dubai

Dr. Paul S. D. Mushi

dominick.paul3@gmail.com

Abstract

Teacher education is a global profession exhibited by instructional models that promote higher standards of students' learning and the promotion of the 2030 education goals[18] (Dixit 2014, UNESCO 2005, 2014 and 2017). The ensuing questions is, how is pre-service teacher education curriculum structured to respond to both the global alert and local society expectations? (Lee and Christopher 2016)[19]. This paper attempt to respond to the raised concern using evidence based innovation of preservice teacher education reform in the Africa region[20]. The global perspective of the profession informed the review journey. The paper benefited much from three decades of personal experience in sharing international and regional Africa practices as a teacher educator, curriculum developer, review leader and supervisor[21].

The Social Constructionism paradigm[22] was instrumental in shaping the methodology aspect. This was complimented by Creswell (2009), Niglas, (2004) as well as Creswell (2012), interactive and empathetic methods. The tools are well suited in the investigation of a phenomena of social interest in which

[18] UNESCO (2005, 2014) United Nations Decade of Education for Sustainable Development (2005-2014) Guidelines and Recommendations for Reorienting Teacher Education to Address Sustainability. http://unesdoc.unesco.org/images/0014/001433/143370e.pdf
UNESCO (2017). UNESO and Education 2030. http://unesdoc.unesco.org/images/0024/002481/248136e.pdf

[19] Lee, C., and Christopher, D. (Eds.) (2016) Quality and Change in Teacher Education. Western and Chinese Perspectives

[20] The United Republic of Tanzania (2007). Teacher Education Development and Management Strategy (TDMS) - 2007/08 to 2010/11. Dar es Salaam: Ministry of Education and Vocational Training. In cognizance the growing number of private providers of teacher education, it is prudent that the level of participation of other partners in the curricular design and development be considered

[21] Campbell, Catherine, "Leadership and its Impact on Supervision Being an Effective Supervisor; Learned Behavior or Innate Characteristic" (2011).Research Papers. Paper 54. http://opensiuc.lib.siu.edu/gs_rp/54
Glatthom, A. A.; Boschee, F.; Whitehead, B. M. (2009). Curriculum Leadership: Strategies for Development and Implementation. London: SAGE.

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curriculum reform, a subject of this paper is a high stake[23].

Data was collected from a purposeful and convenient random sample of 113 (89 M and 24 F) stakeholders from five (5) of the county's six educational administrative regions involving policy makers and high informed officials and educators in March 2016. A stakeholder collaboration, consultative meetings, workshops, round table dialog, interviews and direct observation of classroom teaching – learning led the process. Diffusion of the review process and common conceptualization and stakeholders' ownership of the process at inception was made possible through a pre-review capacity building approach.

Information collected focused on avenues for developing an effective teacher education curriculum, its content, management and implementation considerations, assessment tools and contexts, organisation and quality assurance aspects and structures. Data collected was subjected to a descriptive analysis by creating thematic groups and subthemes responsive to the problem of study.

The findings revealed that, the current curriculum suffered from various shortfalls: superficial, rushed development, inconsistency in weight by courses, un-reliable assessments and incoherent single-handed supervision. There was no firm background information or framework which guided the 40 years old curriculum in place. A mismatch between teacher education curriculum and the demands of from the basic and secondary education existed, with serious lack of quality assurance tools. The labour market conditions were not factored into decisions about curricula, recruitment of students, and employment and promotion of teaching staff.

A teacher education curriculum framework[24] *was developed using data from international benchmarks, needs assessment of the pre-service teacher education college (micro-audit of institutional capability) and a situational analysis survey of stakeholder's views (macro-survey) on teacher education curriculum.*

The innovation reform process produced a pre-service teacher education curriculum, benchmarked to international curriculum framework taking into consideration the global professional teacher education perspective. Innovatively, new teacher education quality assurance tools were developed: pre-entry and exit student assessment form, course assessment tool

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[23] Dixit, M. (2014). *Professionalization of Teacher Education*. International Journal of Research (IJR) Vol-1, Issue-4, May 2014 ISSN 2348-6848.

[24] The author was once a curriculum leader in the education ministry mandated with curriculum development process for the basic and teacher education (July 2005 – February 2013). UNESCO sharpened his skills through opportunities to sharing and exchange of experiences in international team of experts, conferences, community of practice and Counselor to IBE. In 2015/206, the author participated in a Team of experts with a consultant in the development of the teacher education curriculum framework. The final product was published by IBE-UNESCO (2017). Prototype of a National Curriculum Framework. Geneva: IBE-UNESCO. http://unesdoc.unesco.org/images/0026/002600/260045e.pdf

(by students), college and student portfolio, internal and external quality assurance and tools (programme), and an external comprehensive examination at exist. Partnership collaboration into teacher education was introduced after building capacity of a first cohort of 360 stakeholders from the 6 administrative regions.

The new tools demand renewed capacity for effective response to demands of effective preservice teachers who meet the local and global professional competence criteria[25] (http://www.p21.org/our-work/p21-framework).

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[25] The SDGs, also known as Global Goals, build on the success of the (MDGs) and are they call for action by all countries, poor, rich and middle-income to promote prosperity and must go hand-in-hand with strategies that build economic growth and addresses a range of social needs including education. http://www.un.org/sustainabledevelopment/development-agenda/

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Designing e-Cognitive scaffoldings and Measure its Impact on English Grammar of Middle Schools Underachiever Students

Owaishah Al zahmi

200103029@hbmsu.ac.ae

Prof. Hamdy Abdelaziz

h.adbelaziz@hbmsu.ac.ae

Abstract

This research aims to study the impact of e-Cognitive Scaffoldings on underachiever learners' grammar competencies in middle schools. The study is going to utilize technology to achieve this goal by designing an electronic platform that provides learners with appropriate support to help them perform better English grammar. The study is based on experimental research with control group, pretest and posttest to measure the impact of intervention on learners' performance. ANCOVA analysis of covariance will be used as a data analysis tool to compare results of both groups of study.

Keywords*: e-cognitive scaffoldings, English grammar, underachievers, middle schools.*

Introduction

English language teachers utilize e-Learning environments that would foster their students' learning rather than using conventional teaching methods in classroom settings where it is impossible to provide sufficient face-to-face interaction with large group of students. With the increasing utilization of instructional technologies, teachers are able to focus on tackling certain areas of deficiencies among their students and provide them with proper instruction. Cognitive Scaffolding can aid teachers to help students foster their learning through the careful sequencing and instruction of content that is customized according to learners' capabilities.

The term scaffolding was found throughout published studies that defined scaffolding as a synonym for the word "teaching" or in other studies as "support" (Wilson & Devereux, 2014). Scaffolding's meaning as it was cited by Mchiewicz & Thompson (2014) is a process of helping the child or the novice learner to solve assigned problems, complete tasks, or achieve learning goals which are beyond his current ability.

Problem Statement

Writing skills are among these challenges that encounter students due to the lack of proficiency in English language in which they are not really have mastered the vocabulary and grammar very well, in fact, grammar is considered one of the most critical aspects that learners of second language need to deal with (Singh, Singh, Razak & Ravinthar, 2017).

Singh, Singh, Razak & Ravinthar (2017) argued that the grammar deficiency is obvious in both primary and secondary school students despite the plenty exposure of grammar exercises and practices, students are still uncertain about the use of grammar, consequently, students are still struggling in the writing skill, and this deficiency continues to appear with learners of higher education (2017).

Research Questions

The study aims to answer the following questions:

1. What are the criteria of designing e-Cognitive scaffolding that support underachiever students of English language grammar?
2. How to design e-Cognitive scaffolding that promotes underachiever students of English language grammar?
3. What is the impact of utilizing e-Cognitive scaffolding on students' achievements in English grammar?

Research objectives:

This study strives to meet the following objectives:

1. To identify the standards needed to design e-Cognitive scaffoldings to support underachiever students English grammar learning.
2. To find e-Cognitive scaffolding strategies the will help underachiever students to promote their English grammar**.**
3. To investigate the impact of utilizing e-Cognitive scaffolding on the achievement of underachiever students in English grammar**.**

Literature Review

English as a second language is possibly problematic for some students (Qassemzadeh & Soleimani, 2016). This problem is clear in the writing tasks produced by students. Students face difficulty using appropriate vocabulary and grammar when writing, consequently producing poor qualities of writing, as conventional strategies of teaching grammar used in the classrooms resulted to lack of students' involvement in learning (Qassemzadeh & Soleimani, 2016).

Arabs as second language learners tend to make common mistakes specifically in grammar. An error analysis study conducted on Arab learners has stated that, in most cases, learners have made similar mistakes in grammar such as; misuse of subject verb agreement, misuse of singular and plural, verb tenses, prepositions, pronouns, articles… etc. (Alahmadi, 2014). These errors are usually triggered by the interference of the first language as they are likely to overgeneralize the system of the first language to the second language in addition to other personal or environmental factors, in another case, learners in many contexts know the grammar rules but they end up with failure to apply them correctly (Alahmadi, 2014; Singh, 2017). Guiding learners might be the best solution in this situation as it supports learners and lead them to increase their grammatical competence within their writing samples (Wagner & Wulf, 2016).

Learners have different abilities in the same classroom, and for most of the classroom face-to-face interactions, it is difficult to provide all leaners with essential detailed and individual support they need, which requires teachers to find innovative

and creative ways of teaching to provide learners with opportunities to enhance their learning (Wilson & Devereux, 2014). The study of Bataineh & Mayyas claimed that using technology enabled teachers to provide students with timely feedback as they submit their responses, allowing unlimited attempts enabled students to get reasonable amount of grammar practice which consequently revealed significant positive results in the students' grammar scores (2017). In addition, utilizing technology in classroom helps individual learners to become automated in their learning since learning through different computers software have a great effect on increasing the students' confidence and independence, they become less dependent on their teachers and more responsible for their own learning (Qassemzadeh & Soleimani, 2016), also, it is less stressful for students to engage through online interactions as it allows them enough time to think and reflect while learning (Lee, 2008)

With the emergent of advanced technologies, the term scaffolding is not merely used to describe the human interaction between teachers and students, the focus is on the effect design of technological tools of support or guidance that increase the students' gradual understanding and lead to promote the learning (Devolder, vanBraak& Tondeur, 2011). It is important to understand the students' ZPDs in order to focus on certain ways by which students develop by determining the current level of students' knowledge and skills, hence, increase their learning toward higher levels (Wilson & Devereux, 2014). Scaffolding occurs when lower learners get assistance from experts or higher level individuals, teachers in our case, to raise their Zone of Proximal Development (Lee, 2008). However, when adopting cognitive scaffolding, teachers need to consider providing students with opportunities to figure out what they have to do themselves (Mackiewicz & Thompson, 2014) as support alone might lead to dependency (Wilson & Devereux, 2014).

Methodology

The Target Population

The target population of the research includes the English language learners across the UAE schools. This study is directed to help the underachiever English language learners and help them improve their writing skills in the English language.

Accessible Population

The study will be conducted in Fujairah Emirate as the researcher has access to schools located in Fujairah. Furthermore, all the public schools in all the Emirates follow the Ministry of Education system which means that all learners are provided with the same education system, curriculum, and textbooks for the English subject.

Sampling

A random sampling for the participants will be carried out in Fujairah Emirate giving all the schools in Fujairah equal opportunity to be part of the study. The research will focus only on one stage in middle schools which will be the seventh graders to have more control over the other confounding variables. The study will take place in two middle schools where participants in one school will take role of the control group of the study, while the other school participants are going to be

experiment group where the treatment will be applied on learners.

Research Design

As the study aims to measure the impact of the independent variable which is the design of the e-cognitive scaffoldings on the dependent variable that is the underachiever learners' results in the achievement test at the end of treatment, the researcher will use one of the true experimental designs with randomized subjects, pretest-posttest control group design.

Randomly assigned control group and experimental group undergo a pre-test at the beginning of the study. The independent variable or intervention is going to be applied with the experiment group, whereas the control group will receive no intervention. Both control group and experiment group will have a posttest for the sake of comparing the results at the end of the study.

For selecting the sample population of underachiever learners in the study, the results of the end of term exams are going to be used. By analyzing the learners' performances in the writing tasks, underachiever learners' grades should be below the average grades of the whole class. If the total average of the students' performance in the writing task was 60%, then students who get less than 60% are going to be considered as underachievers thus they are involved in the study.

Data Analysis

The study will use ANCOVA; analysis of covariance as a tool for data analysis. The results of pretest and posttest of the two groups; control group and experiment group; are going to be compared to find any significant effect, thus, decide on the impact of utilizing the e-Cognitive Scaffoldings on underachiever learners performance in English grammar. The study is on progress, results and will be presented as the data are collected and analyzed.

Delimitations of the study

The sample of the study are only grade seven underachiever learners that will be involved in the study as it is difficult of include all stages in the middle schools. Moreover, the Ministry of Education is planning to implement a remedial program that will involve different stages of middle school, therefore, the study will be implemented only on grade seven to assure that students undergo through the same circumstances during the study. As a result, the conclusions of the study should be generalized carefully since study will not involve all middle school stages.

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Applying Discovery Board Application for New Employees in the General Directorate of Residency and Foreigners Affair in Dubai

Prepared by:

Aisha Al-Ali - 200105160

Amnah Al Hmoudi – 200105098

Hessa Abdulla - 200104550

Maryam Al Shehhi - 200105397

Introduction:

Technology has a huge impact on our daily life, including the way we teach and learn. For this reason, teachers need to integrate technology effectively into the learning environment.

Research has shown that the use of technology support learners' memory development, communication, and problem-solving skills (Gokdas & Torun, 2017). We explore the idea of applying *discovery board* application for new employees in the General Directorate of Residency and Foreigners Affair in Dubai (GDRFA).

Design:

The learning module (LM) named *discovery board*, is a smart application for employees that minimize the chance of conducting preliminary training and induction programs. Giving the reason each new employee will download the app and explore the main information about the GDRFA. The application is designed to increase the speed and depth of the learning and ensure that learners are highly engaged in the learning process (Bates, 2016).

The content of the LM is derived from different learning theories such as cognitivism, constructivism, behaviorism, connectivism, and collaborative learning. Moreover, development of the *Discovery Board* was achieved using the ADDIE model, which is a systematic instructional design model that includes five phases: analysis, design, development, implementation, and evaluation (Bates, 2015). This model has been chosen to ensure that the content has a clear meaning and immediate value to the learners in the (GDRFA).

The target learners are Emirati employees, whose ages between 18 and 25, and their total number is 25. The *Discovery Board* work well for this group age as they are self-directed learners and it fits into their schedule. A study was conducted by Porter and Sturm (as cited in Folinsbee, 2008), found that adults prefer online learning for many reasons such as family obligations, busy schedules, and inability to get into face-to-face programs.

Upon the completion of each module the employee will be given a badge in the app. The environment of discovery board is proposed to gain knowledge. Therefore, badges can be earned for demonstrating knowledge and skills upon completing an activity. The learning environment must be knowledge-centered, in which badges can support if they are implemented successfully (Anderson, 2008).

Purpose

The main goal of this app is to allow new employees to generate a deep knowledge towards the daily tasks of GDRFA and start working as experts. Applying *discovery board* will reduce the training period as well as it can be used as a reference for all employees.

In a digital age, it is crucial that both learners' skills and knowledge of content are assessed (Bates, 2016). Based on this view, the *Discovery Board* aims to assess employees' skills, such as thinking and problem-solving skills, by using discussion forums, games and authentic activities. On the other hand, their knowledge will be assessed by using quizzes and tests.

Assessment & measurement:

To measure the perceived effectiveness of the *Discovery Board*, a post-test will be provided after the completion of each module.

The *Discovery board* application will be used as a reference source for all employees in the GDRFA. It allows the speed of information dissemination among employees. The facilities that are provided can match each employee's needs.

Words related to the topic:

1. Discovery Board.
2. Learning Module.
3. Learning theories.
4. Training program.
5. Mobile application.
6. Information Technology.

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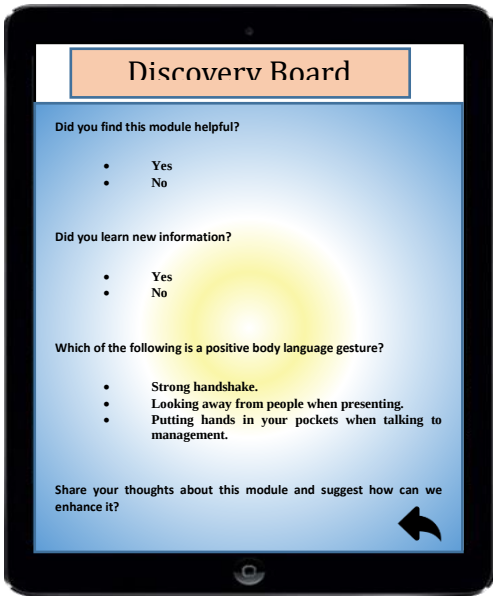
When users click on a topic, a brief description of what students need to know will appear. It might include videos, texts, and pictures.

When students complete a course, a check mark appears on that course.

Students will earn an e-badge if they complete the course early or solve a critical question.



After reading the materials for the body language module, the

After finishing the entire module, students are asked to complete a survey.

Discovery Board

A smart application for employees who need a training program to generate a deep knowledge of the GDRFA

Design an E-Training Program Based on Cognitive Coaching Techniques and Measure Its Impact on Developing Assessment Competencies Among UAE Middle Schools' Teachers

Saleimah AlAbdouli

(200102982@hbmsu.ac.ae) &

Prof. Hamdy Abdelaziz

(h.abdelaziz@hbmsu.ac.ae)

Abstract

This research aimed at designing an e-training program and measuring its impact on developing UAE teachers' assessment competencies. To achieve this goal, the study adopted one of ISD model to design an interactive e-training program. This training program was guided by the principles and stages of cognitive coaching techniques. This study is adopting a mixed design of developmental and true experimental research. The first type of developmental research design and followed by a control group pre—posttest were used to develop proposed e-training program and measure its impact. The stratified random sample of male and female English teacher will be withdrawn from the accessible population.

Keywords: e-training, cognitive coaching, classroom assessment competencies, English teacher, UAE

Introduction

Teachers' professional development plays a fundamental role in the teaching process. It leads to improve their designs of instructions, practices and assessment methods. The development will create advanced and effective learners' experiences. Planning the programs of a professional development such as training course facilitates the teachers a lot. In different countries, some of these programs are delivered face-to-face and some of other delivered virtually. These programs give the teachers opportunities to explore, share and increase their knowledge. As an example of those effective programs, Daphne and Andrew of Stanford University have established a free online platform. They called it Coursera which as a window for creating new disciplines in the education domain. Coursera has several courses for benefiting learners and teachers (Silvia, 2015).

Problem Statement

Due to lack of assessment competencies among the UAE middle schools teachers

and with advancement of technology there is a need to design an e-training based on cognitive coaching for teachers to develop their assessment competencies.

The research is guided by the following research questions:

Questions

1. What are the standards and criteria of designing E–training Programs based on cognitive coaching techniques?
2. How can we design E–training Programs based on cognitive coaching techniques?
3. What is the impact of a proposed cognitive coaching e-training program on developing assessment competencies among UAE middle schools' teachers?

Objectives

1. To investigate the standards and criteria of designing E–training Programs based on cognitive coaching techniques.
2. To design E–training Programs based on cognitive coaching techniques.
3. To explore the impact of a proposed cognitive coaching e-training program on developing assessment competencies among UAE middle schools' teachers.

Literature Review

Literature review discusses the definition, importance, and process of cognitive coaching. Additionally, it discusses the relationship between training and coaching. Furthermore, this literature review proposes adult learning theories and its importance on human development. Moreover, it will demonstrate a cognitive apprenticeship. It displays in addition to that, the classroom assessment and some important areas are related to it.

In Garmston (1993) article defined a cognitive coaching as a process provides teachers with the opportunity to change their way of thinking regarding teaching process. In this article, Garmston (1993) studied the reflections on cognitive coaching for two sets teachers. The reflections showed the effectiveness of cognitive coaching for teachers. The participants reported a significantly higher level of self-evaluation and analysis. At the same study, the researcher studied the process of cognitive coaching and the findings were that this process consists of three stages: pre-conference which concerns with the goals, observation, and post-conference which concerns with the assessment.

Costa & Garmston (1996) reviewed different areas related to cognitive coaching and he found that it improves the skills and abilities of individuals. Additionally, they found that a cognitive coaching supports teachers to become anonymous and independent. The phases of cognitive coaching are: planning a conference, observation, and a reflective conference. A

coach should ask some questions to design an effective coaching such as, what are the coaching goals? what are the procedures to achieve these goals? How will the participants achieve the goals? These questions should be asked by a coach before starting to give a coaching in any training context (Costa and Garmstonn, 1996). Jennefer & Rae (1995) studied the relationship between training in Cognitive Coaching and a number of qualitative and quantitative components of teacher cognition and behavior. They conducted this study to explore the impact of cognitive coaching training and practice on enablement of teachers and their efficiency. They found that teachers' efficiency and was empowered by coaching.

The current research is guided by main theories and appraoch for designing the e-training program such as cognitive apprenticeship (Dennen & Burner 2004) and adult learning theories Knowles (1973).

Din, Nordin, Kassim, Ahmad, Jusoff, Johar, & Mastor (2010) defined e-training as online programs or courses to train workers or learners with utilizing different information communication technologies. They found that as the evidence of success an e-training program is enablement the workers on main skills as solving- problems and higher order thinking. In other words, inactive e-training will not aid employees to solve reliable problems or think critically. This article moreover discussed hybrid e-training model to fill the gap between developing technologies and wide-ranging pedagogical models to define a program quality. The researchers explored that hybrid e-training model leads to a meaningful e-training. Additionally, they examined that the hybrid e-training can be affected by learner style preferences.

Methodology

Target Population

A target population for this research is all UAE middle schools English teachers. All female and male English teachers in UAE middle schools are targeted to generalize the results to them.

Accessible Population

Fujairah middle schools teachers represent the accessible population in to which a researcher will apply the conclusions. Each school has an equal chance to be selected in a sample.

Sampling

A sample will include 40 English teachers from Fujairah region. Their ages range from 26-45. The experimental group, 20 male and female teachers and control group, 20 male and female teachers. A researcher chose a stratified random sample. In other words, the UAE middle schools English teachers divided into strata (Fujairah middle schools teachers). Then, a researcher will choose a separate simple random sample from some middle schools in Fujairah. These separate samples will be combined to represent a stratified random sample.

Research Design

The current research is depending on a mixed design approach: development and

true experimental. The first type of developmental research will guide the design and development of the proposed e-training program. Experiment design is Randomized subjects, pretest-posttest control group design. It means the subjects are assigned randomly to experimental and control group. Both groups will be given a pretest. Then the e-training will be given to the experimental group. Afterward, both groups will complete posttest.

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Design an Automated Pedagogical Agent to Improve Pronunciation among Emirati Kindergarten Students

Huda Ashoor Almulla

(200102404@hbmsu.ac.ae) &

Prof. Hamdy Abdelaziz

(h.abdelaziz@hbmsu.ac.ae)

Abstract

This research aimed at designing an Automated Pedagogical Agent to improve Pronunciation among Emirati kindergarten Students. To achieve this goal, the study utilizes the use of ADDIE model to design and develop educational training programs. Quantitative method is the main tool in this research. In this regard, this study uses one-group pretest-posttest design to monitor the effects of automated pedagogical agent (APA) teaching method upon 15 children at Al Amwaj Kindergarten.

Keywords: *automated pedagogical agent, artificial intelligence, intelligent tutoring system, kindergarten, UAE*

Introduction

The government together with the educators have significantly improved education services of United Arab Emirates. They have implemented new educational methods and technologies. There are educational branches considered as underdeveloped. Kindergarten education of Emirati children has not been studied as properly as other its branches. However, in early ages children gain basic learning, communication, motor and many other skills required for their future successful education, employment and other aspects. Their ability to pronounce words and actively use vocabulary is very important. Current technological advantages must be used in educating young learners to pronounce words properly which automatically will enlarge their vocabulary.

Problem Statement

With the development of technology, intelligent tutoring systems have become widely spread and implemented in the education of every level. Artificial intelligence attracts more children's attention than regular educators, as they provide more play options, colorful pictures and funny sounds. In UAE kindergartens , children are exposed to English as second language in the age of 5 (KG 2). So, they need a system to improve their pronunciation.

The research is guided by the following research questions:

Questions

1.What are the educational standards and criteria for designing APA in kindergarten level ?
2.How can we design APA to improve pronunciation for kindergarten students?
3.what is the impact of utilizing APA on pronunciation skills for kindergarten students?

Objectives

1. To identify the educational standards and criteria for designing APA
2. To study the methods of how educators can design APA for pronunciation learning for kindergarten students
3. To investigate attitudes and perceptions of educators towards APA usage to teach Emirati kindergarten children

Literature Review

Literature review discusses the definition, importance, and process of cognitive coaching. Additionally, it discusses the relationship between training and coaching. Furthermore, this literature review proposes adult learning theories and its importance on human development. Moreover, it will demonstrate a cognitive apprenticeship. It displays in addition to that, the classroom assessment and some important areas are related to it.

Holland (2013) revealed the features of practical language acquisition in England, based primarily on an adequate understanding and use of the lexical composition of language and grammatical structure, quantitative and qualitative transformations in the development of vocabulary are traced, and the originality is revealed at various stages of speech education in school.

According to Baylor (2011), “While the addition of an anthropomorphic interface agent to a learning system generally has little direct impact on learning, it potentially has a huge impact on learner motivation” (Baylor, 2011, p. 291). Advantages of APA include:

- The relevance of the educational content, convenient methods of updating and maintaining content.
- Modeling of tasks and competences.
- Establishment of correspondence between competences and teaching materials.

A new generation of adaptive information access systems make attempts to combine conceptual models with automatic document processing. The principle of an individual approach to learning on the basis of personal needs, taking into account the socio-psychological characteristics of the individual and those restrictions imposed by activities, the availability of free time, financial resources, and the like (Baylor, 2011).

Atif, Benlamri & Berri (2003) in the "Dynamic learning modeler" shows students' outcomes of learning tasks (which can vary from simple questions to complex program assignments). Unlike non-intellectual control tools that can only indicate the correctness or inaccuracy of a solution, intelligent analyzers can tell what exactly is wrong or what is not completely unleashed and that are missed, or incorrect knowledge can be responsible for the error. Intelligent analyzers can provide the student with a powerful feedback technique

for working out errors and updating the student model.

Methodology

Target Population

This study targets government kindergartens in the UAE as the source of data and the main beneficiary of the research.

Accessible Population

The present study conducts a quantitative research, mainly observing the linguistic powers of government kindergartens in Umm Al Quwain (UAQ). The accessible population should not be confused with targeted population because it forms a subset of the targeted population.

Sampling

A group of 15 Emirati-kindergarten learners will be sampled from the Al Amwaj Kindergarten using a purposive sampling technique. Based on the characteristics and qualities of learners, which the researcher is familiar with, as well as the objectives of the study, the researcher chooses purposive sampling technique to make judgmental and subjective conclusions that concern the targeted population.

Research Design

This paper aims at designing a proper APA system that is based on "learning objects, pedagogical agents, and the sequence of instruction." In this regard, this study uses one-group pretest-posttest design to monitor the effects of automated pedagogical agent (APA) teaching method upon 15 children at Al Amwaj Kindergarten. At the beginning of the exercise, the children's pronunciation and vocabulary skills are tested by educators and the researcher (Pretest). The 15 sampled children then are trained for three months using an automated pedagogical agent. The children's output data after training then is examined by the educators and the researcher (Posttest). Through observation and cross-sectional analysis, the difference in learner's posttest and pretest scores will be attributed to the automated pedagogical agent (APA) teaching method. Since this approach has no control group, the data collected accurately will describe the effectiveness of the new teaching method on the learners' ability to pronounce words and advance their vocabulary.

Design Model

Since this project aims at designing APA to improve pronunciation and vocabulary skills for kindergarten students, the study utilizes the use of ADDIE model to design and develop educational training programs. Markedly, the term ADDIE is an initial for "Analyze, Design, Develop, Implement, and Evaluate" (Molenda, 2003). The model is significant for this study because its stages are defined; with each stage emphasizing on specific development skills, hence, making it easy to implement the effective training tools.

Data and Analysis

Meta-analysis is carried out for the pretest phase, where descriptive statistics are used to analyze the students' score. At the same time, the data collected from the students' continuous assessments will be organized

and analyzed using the SPSS statistical software in the posttest phase. The outcomes of the pretest and posttest are used for comparative analysis to evaluate the effects of APA teaching method on the children's ability to pronounce words and expand their vocabularies. Chi-square test will be used to test for association and correlation between APA teaching program and the learners' pronunciation skills. In addition, a cross-sectional analysis will be carried out to evaluate the parent's perception of the use of the technological device to train and improve their children's pronunciation skills.

Delimitations

Both cross-sectional and meta-analysis that will be used in this study are known to have various dissimilar aspects that make it difficult for comparisons. Besides, the one group pretest-posttest design used in this project have no control group. Consequently, one may argue that the changes between pre-test and post-test results may not be due to the effects of the treatment (APA) under investigation, but may due to learners' maturity, instrumental decay, characteristics of data collection and its bias, problems related to statistical regression, learners' attitude, and problems in implementation strategies. Due to limited resources and time, this study will use a smaller sample size of 15 learners from one kindergarten; the results may not be a true reflection of the targeted population. Besides, a smaller sample size increases the probability of committing Type II error that not only skews the results, but also decreases the power of the study. Despite the limitations, the findings of this paper will be significant for the UAE kindergarten schools as various efforts are geared towards exploiting the country's advanced technology in the current education system.

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Design a Flipped Training Program and Measure its Impact on Interpersonal and Self-development Competency in Dubai

Ala' Abu Hamdan:

200102534@hbmsu.ac.ae

Prof. Hamdy Abdelaziz:

h.adbelaziz@hbmsu.ac.ae

Abstract

The aim of this research is to know the impact of flipped learning approach on interpersonal and self-development competencies in the business working environment in Dubai, United Arab Emirates. Thus, a comparison between two classes, one with flipped classroom approach and the other with traditional classroom approach is conducted in a medium-sized company with training department based in Dubai. The experiment has been done in the first quarter of 2018. A training course on interpersonal and self-development competencies was given to employees working in the same company based in Dubai. The employees were divided into two groups, the control group and the experimental group.

Keywords: Flipped learning, flipped classroom, workplace.

Introduction

Flipped learning simply means flipping the teaching method from teacher-centered to learner-centered. It is a new approach of learning that involves the use of technology. For example, teachers use technology tools to develop instructional videos, and ask learners to watch a certain video prior the class time. This change in the class structure will give better chance for meaningful activities during class time (Yarbro, 2014). According to Bishop & Verleger (2013), flipped learning is gaining popularity as an instructional approach in the educational field, and it is believed that it also has a great potential in the corporate learning environment due to technology accessibility and availability.

Problem Statement

Despite of all the latest technologies around us, and while most companies integrated these innovative technologies into their day to day operating systems, training departments in companies from different industries do not seem very keen on implementing the latest technology solutions in their trainings. It seems that the traditional learning environment where the instructor meets face to face with the learners is still the popular approach of delivering training sessions in the business

field. However, companies are in need more than before to align their training systems with the daily operating systems in a way that both rise up into the same level. Since it is very natural that companies need to keep up with the technology and use it across their training departments, they need to adopt a new learning approach in order to cope with all the changes and transformation approaches happening in the smart technologies. Flipped learning approach is one of the worthy approaches that can be introduced and used in training and professional development system, because it provides a technological and learning solution that suits the nature and learning style of the modern learners. This approach would enhance the training effectiveness and increase the learners' engagement level during training. Unfortunately, training departments across companies witness a non-unified course design, and this is the reason why the training desired results are not achieved on the departments' level. In addition to that, traditional learning environment delivers a monotonous way of learning, and this is the reason why the desired learning and training results are not achieved on the leaners' level. This research will explore the principles that instructional designers need to consider when designing a flipped classroom, and customize the flipped learning approach to design interpersonal and self-development training course and measure its impact.

Research Questions

1. What are the expected standards of designing a flipped classroom as an instructional approach for company training programs?
2. How can we use the flipped training as an instructional approach to design interpersonal and self-development training course for companies?
3. What is the impact of flipped learning approach on interpersonal and self-development competencies?

Objectives of the Research

There are three objectives this research is trying to accomplish. First is to explore the benefits of implementing flipped learning approach in the business environment. Second is to understand the standard principles of designing a flipped classroom as an instructional approach for company training programs. Third is to analyze the impact of flipped learning approach on interpersonal and self-development competencies.

Reviews of Related Literature

There are few evidence and research of implementing flipped learning in the corporate environment and professional organizations to examine the learners' achievement and engagement level. However, most of the research in the literature involves flipped classrooms at the high school and college level. Results were based on the learners' performance and engagement levels during the course. These studies shade the light on different subjects and majors that experimented fully and partially flipped classrooms.

In the Capital University in Ohio, Wilson (2013) conducted a study using the flipped learning approach. Flipped classroom was implemented in one of the statistics courses under the social science major. As per Wilson, learners were able to practice more

statistics related to the real world during class time. As a result, learners from flipped classroom demonstrated a better knowledge on statistics compared with the learners from the traditional classroom. Similarly, Simpson and Richards (2015) redesigned a population health program from the field of nursing. They implemented flipped learning approach, and the outcomes were positive in terms of increasing the learners understanding of the material. On the other hand, Strayer (2012) made a comparison between two introductory statistics classes, one of them using the flipped learning approach and the other using the traditional learning approach. He found out that learners from the flipped classroom were not very happy with the new learning approach and the fact that they need to do some learning tasks.

One additional study was conducted in the University of British Columbia (2011). Flipped classroom was implemented in the section of Introduction to Modern Physics, and classroom time was spent on engaging activities and discussion. Both instructors Deslauriers & Wieman (2011) compared the results of the Quantum Mechanics Concept Survey (QMCS) - a standard measure of quantum mechanics knowledge – which is related to the main topic of the class. They found that learners of flipped classroom scored higher than learners of traditional classroom.

Bates and Galloway (2012) redesigned a very large physics class using flipped learning approach. Learners were asked to study the material before coming to class so that the class time can be used for effective discussion. They found out that learners benefited a lot from the flipped learning approach, and at the same time learners' engagement has significantly increased during class time. Only one thing Bates and Galloway noticed while implementing flipped classroom, was about teachers' reaction to the new approach. Teachers found the new approach a little bit hard to adapt. It took them sometime to understand the fact that learners need to gain the new information themselves and that their role as teachers is to dedicate and facilitate the class time for effective discussions.

Heinerichs & Pazzaglia (2015) applied the flipped learning approach in the field of nutrition. The flipped model was implemented in two undergraduate classes for 142 learners. The instructors designed learning activities that can be done before the class. The results showed that flipped learning approach was well received by most of the learners. Likewise, Roach (2014) examined the field of microeconomics, and implemented partially flipped classroom. He found that learners had positive perceptions regarding flipped classroom. Also, Butt (2014) applied the flipped learning approach in an undergraduate actuarial course in its final year. Learners' views were taken into consideration at the beginning and the end of the course. He noticed that as the semester goes on and reaching the end of the course, learners have positively accepted the new approach.

In the chemistry filed, Baepler, Walker, & Driessen (2014) implemented the flipped approach in one of the chemistry classes and examined the effect of decreasing the learners' physical time in class. The outcomes showed that learners in flipped classroom have achieved the class learning

goals in the same level of the traditional class. Furthermore, McLaughlin and Rhoney (2015) conducted a study using the flipped approach in the field of neurologic pharmacotherapy to evaluate the learners in terms of performance, engagement and perception about the online interactive activity. Later, they compared the results with the traditional in-class activity handouts. They found that the learners in flipped class scored higher grades in the final exam. In algebra class, Love, Hodge, Grandgenett & Swift (2014) applied the flipped approach in one class, and the traditional approach in another section of the course. They developed a survey and a final exam to measure the learners' performance level. By the end of the course, the survey revealed that learners in the flipped class received this approach with positive attitude. Also, the exam marks showed that learners in the flipped class had better results than those who were in the non-flipped class.

Flipping the classroom partially might be a suitable option for teachers who would like to start using this approach (Cold 2013). Flipping the whole classroom content into flipped learning might be a lot for the learners to comprehend. Thus, introducing the flipped approach step by step, and making some of the resources available online can be suitable for some courses. It is like flipping more material slowly until learners feel comfortable with the new approach, and the approach seems suitable with the topic nature. That's why some of the studies have considered classrooms that are partially flipped. An example of a partially flipped classroom was conducted by Dawes and Fox (2013) in math class for the 11th grade. Their strategy was to provide the learners with a video clip that is 15 to 20 minutes long. The video would give an introduction to the math lesson, and learners should watch it at home prior to the class. Then learners are asked to solve mathematical problems related to the lesson and the video clip they watched. During class time, teacher provided further explanation of the lesson for a short time, and gave the learners a chance to do their homework and provided guidance when needed. They found out that learners enjoyed this approach of learning and the level of their understanding has increased. Also, Hung (2015) studied the impact of the partially flipped learning approach on the learners' English language and their engagement level. The results showed that partially flipped classroom is more effective than the traditional class.

Methodology

1. Population

1.1. The target population chosen for this research is all the full-time employees working in a medium-sized company that has training department where it offers the employees self-development competencies training during the first quarter of 2018.

1.2. The accessible population includes all the full-time employees working in medium-sized company that has training department where it offers the employees self-development competencies training during the first quarter of 2018 in Dubai. The company was offered a consent form to take its approval to conduct the experiment in its premises, training department. In

addition to that, an email was sent to all departments manages and supervisors to communicate the new learning approach and encourage them to send their subordinates and be part of this experiment. It also explained that the participants will be divided randomly in the flipped or the traditional classrooms. Similarly, prior a week to the course, an email was sent to the nominated employees who were sent to training to inform them that this training course along with their results in the posttest by the end of the course, will not affect in any way their performance appraisals, and the aim of the training is to improve their self-development competencies.

2. **The Sample**

The participants in this research are all full-time employees in junior levels working in one of Dubai companies that has training department where they provide self-development competencies training to their employees in the first quarter of 2018. Each one of the employees was chosen based on his/her availability to attend the training and was nominated by his/her line manager or direct supervisor.

The participants in each group; control and experimental groups, compose a diverse classroom. They come from different nationalities, lifestyle, and educational background. All of them work for the same company, but they come from different departments within that company, i.e. not all of them know each other or may not know each other very well.

The instructor giving the training is also a full time employee working in the training department of the same company. The training duration is 5 successive days for a total of 15 hours, i.e. 3 hours per day and was conducted in English language. The traditional class was given first, and one month later, the flipped class was given after making sure that all the employees have internet access and laptops at their homes. Also the training with the flipped approach was delivered only after the training material – same material was given to the traditional class – was redesigned using the flipped learning model and given to the instructor, where he in turn had enough time to be prepared to use this new learning approach.

3. **The Research Design**

This research used a quantitative quasi-experimental research design and static group design in order to examine the impact of flipped learning approach on interpersonal and self-development competencies in the business working environment in Dubai. The research compares two different groups as the following:

1. Control group: This group represents the class that will be given training on self-development competencies using the traditional learning approach; face to face classroom. It will take place in a company that has training department where interpersonal and self-development competencies training will be conducted for its employees in the first quarter of 2018. By the end of the training, the

participants will have a posttest only to measure their progress. In addition, a questionnaire to be sent to the participants' lines manager or supervisors after two weeks from the end date of the course to collect data on their progress and achievements in terms of interpersonal and self-development competencies.

2. Experimental group: This group represents the class that will be given training on self-development competencies using the flipped learning approach. It will take place in the same company where self-development competencies training will also conducted for its employees in the first quarter of 2018. Similarly, the participants will have a posttest only to measure their progress. In addition to that, a questionnaire to be sent to the participants' lines manager or supervisors after two weeks from the end date of the course to collect data on their progress and achievements in terms of interpersonal and self-development competencies.

The dependent variable is the participants' scores in the posttest. The independent variable is designing the flipped learning model to deliver a course about interpersonal and self-development competencies. As for the posttest, the design used is a t-test to check the difference of results between the two groups; controlled and experimental groups.

4. The Instrument

The instruments used in this quasi-experimental research are the posttest, and a questionnaire that is sent to the participants' lines manager or supervisors after two weeks from the end date of the course to collect data on their progress and achievements in terms of interpersonal and self-development competencies.

All of these three instruments were used to measure the impact of flipped learning approach on interpersonal and self-development competencies in the business working environment in Dubai. The main goal of using the posttest only is to see if there is significant difference between the two groups after implementing the flipped learning model.

The posttest design used is a t-test, and this instrument is used to measure the results of the posttest statistically and to check any differences between the traditional and the filliped classrooms results. The researcher chose t-test because the sample is relatively small in size, it will help in analyzing the two samples by the use of statistical analysis. When designing the t-test, the researcher used Kirkpatrick's evaluation model (2006).

The Kirkpatrick's model is a common evaluation tool for evaluating the effectiveness of the training in the business filed. This model was developed to define the four levels of training evaluation in the business field and they are: the participants' reaction of the training, the knowledge learned from the training experience, the change and improvement of

participants' behaviors, and the effect of the participants' performance on the business. In this research, only the first three levels of Kirkpatrick's evaluation model were taken into consideration when developing the posttest. The test was conducted at the end of the course, and it contains 20 questions that should be answered in 20 minutes and it tackles different levels: knowledge, skills, and satisfactory level.

The first level is related to the participants' reaction to the training, by this we want to measure how the participants feel about the training and the instructor. For the future, it will help us to improve the training quality and to know the areas of improvements. The second level is related to learning. It is important to measure how much the participants' knowledge has increased after the training, i.e. what new information have they gained. Basically, the learning objectives that we set at the beginning of the course are the ones we need to measure for learning. Thus, participants will be asses based on the learning goals. The third level is related to behavior, and here it is important to assess how far the participants have changed their behavior based on the training given. In other words, it measures the participants' ability to apply the new information gained in the training to the real world which is the work place in this case.

5. Model

The model used in this research is PAAR model. As per Hamdy (2014), participants go through four different phases: prolactin, acting, reflecting, and re-acting.

In the first phase, learners will explore the video links and reading sources the instructor sent to their emails. In this phase, participants show their interest in the content and go through related online material. This phase involves active learning that fits with the adult learners' nature that is represented with motivation and self-directed. The expected result of this phase is that learners can develop the foundation of the new information that reflects their understanding of the main ideas of the material.

The second phase is the acting phase. Here the learners will meet face to face with the instructor and share their foundation of the new information gained at home. This phase involves an active and collaborative learning environment where they share with their classmates and instructor what they learned from the video clips and the reading resources. In addition to that, learners are expected to ask questions linked to their daily tasks at work and learn how to act accordingly. By the end of this phase learners are expected to enhance their inquiry skills.

The third phase is the reflecting phase. After the learners build a logical reasoning of the new information they gained and after receiving constructive feedback from the instructor, the can reflect on their viewpoints and understanding. This is the practical part of the flipped classroom. By the end of

this phase, learners are expected to get answers to their "why" questions.

The last phase is the re-acting phase. Here learners will transfer the newly learned information into the real situation at work. They will be able to put their understating in actin and act upon it. At the end of this phase, learners will be able to build self-authorship as in the ability of reflecting on their personal perceptions and viewpoints.

6. Procedure

The researcher began with sending a consent form through email to the company's top management to get their approval to be part of this experiment. After receiving the approval, the researcher contacted the training department to arrange the time and date of the two courses; traditional and flipped classes. As per the company's policy, employees can't nominate themselves for the training. However, their line managers or supervisors can nominate them based on their availability at the time of training, workload, and the need to take interpersonal and self-development competencies training. Prior one week to the training, the researcher received a list from the training department regarding the employees attending the course. By the end of both courses, learners were given a posttest to measure their progress and achievement in terms of performance at the workplace. Two weeks later, a survey was sent to the leaners' line managers and supervisors to report any change in their subordinates' behavior and how did the training affect their quality of work. All the required data was collected and analyzed to measure the result. The data was analyzed by Statistical Package for Social Sciences (SPSS). Additionally, t-test was used to identify the homogeneity between the control and experimental groups and to know if there is a variance in the posttest mean by using SPSS.

7. Data Analysis

The researcher used descriptive statistics to statistically describe and analyze the quantitative data in this research. The data collected regarding the characteristics of the sample that ranges from gender, age, academic qualification, and their position in the company was analyzed by using descriptive statistics and t-test. The aim of using the t-test is to know if the variation was significant between the flipped classroom and the traditional classroom. The data collected from the posttest was subject to the t-test to test for homogeneity of variance by using both dependent and independent variables.

After two week from the last day of training, the learners' lines manager or supervisors received a questionnaire to collect data on their progress and achievements in terms of interpersonal and self-development competencies.

In order to answer the first research question provided in this research "What are the expected standards of designing a flipped classroom as an instructional approach for company training programs?" the researcher had to take into consideration the learners' characteristics. Such

information was collected from the Human Resources (HR) department where they keep a copy of the personal information needed. The data collected regarding the characteristics of the sample ranges from gender, age, job title, and academic qualifications was analyzed. They are adult learners working in junior positions within the same company who were sent to interpersonal and self-development competencies training to improve their performance and achievements at the workplace. Their ultimate goal is to show some improvements in their performance at the office. Thus, it is very important to keep in mind the training needs to be personalized. Also, because employees usually tend to be busy, the class should not be delivered in a long duration.

To answer the second research question "How can we use the flipped training as an instructional approach to design interpersonal and self-development training course for companies", the researcher implemented the PARR model to redesign a traditional classroom and turn it into a flipped learning classroom. Additionally, the researcher analyzed the data and answers collected.

To answer the third research question "What is the impact of flipped learning approach on interpersonal and self-development competencies?", the researcher used a posttest that was administrated at the end of the course to analyze and summarize the collected data to investigate and explore the impact of flipped learning approach interpersonal and self-development competencies.

8. Delimitations

The delimitations that have been noted regarding this research are as follows:

1. This quantitative quasi-experimental research was conducted in one of the medium-sized companies based in Dubai that has training department, and this research can't be conducted in another company regardless of the its size because the material that was resigned based on the flipped learning model is confidential and belongs only to the training department of that company.
2. The fact that only one instructor who is also a full time employee in the same company delivered both courses; the flipped and the traditional classes, might not help in studying the influence of different styles of delivery on both classes. If the training was facilitated along with another instructor who may be more experienced with the flipped learning approach, the results may not be the same.
3. Due to the busy nature of the business environment, training courses are usually conducted within a short period of time. Thus, the training duration of 5 consecutive days may not be enough to get the desired results to measure the impact of flipped learning approach on interpersonal and self-development competencies in the business working environment in Dubai.

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Technical and Vocational Education Training (Home Economics) TVET

Khadijatou A. Jobarteh

NAME OF INSTITUTION: Curriculum Research Evaluation Development Directorate Region one Complex Kanifing.

ADDRESS: Ministry of Basic and Secondary Education (MoBSE) Willy Thorpe Place Building Banjul

BACKGROUND INFORMATION:

The Gambian Government is ready to invest into TVET related subjects in both formal and informal education sectors. The government's main objective is to empower youths to be able to contribute to the nation's development and also to provide knowledge, skills and attitudes relevant for employment or self-employment. Since TVET describes all kinds of formal training and learning wherever it occurs, institutes, schools, training centers or in the workplace/site of production. The innovation of TVET in the curriculum will ease high rate of student's academic the dropout rate and the Back Way Syndrome. Home Economics is taught in schools and also part of TVET

INTRODUCTION:

The initial foundation of a nation is laid in the individual's homes that make up the nation. Hence the proper operation and management of the home in its various aspects is vital to the development of the home.

- Home Economics is a technical subject that can equip an individual with skills and knowledge. It is divided into Foods and Nutrition which can help in food safety and security. Nutrition education is any combination of educational strategies, accompanied by environment support, design to facilitate the voluntary adoption of food choices and other foods and nutrition related behaviour conducive to people's health and well being
- Clothing and Textiles which cover the availability and the use of textiles, other materials and the development of technology for the making of clothing for human. The innovation of Basic Design and Technology in the junior High School Curriculum will provide young persons with basic skills in technology education as a predisposition to technical pursuits at advanced levels. The subject therefore, offers the student the chance to acquire valuable skill that will open a wide range of opportunities for productive work.
- Interior Decoration the knowledge of which can be used in designing

architectural interiors and their furnishings.

- Home Management is an aspect of Home Economics which deals with managing the home, the recourses in the home and Modeling.
- These are all skills that can engage students in analytic thinking, creativity, and ethical practices and experiential learning. Students can also develop entrepreneur skills.

Strategies for Teaching and Learning Research at a University

By Saad Ebrahim Abbas

Introduction:

When joining a university for a first degree, students, are required to produce essays and academic papers. . Usually after the first semester starts. Such assignment may end up being bored and uninterested for young people who have different expectation and are very energetic full of hope and enthusiastic. A research paper written for an can contain "folksy" words and can be long and elaborate. What happened during the semester when the instructors start teaching the severities of research paper writing? Writing a research or academic papers remain a very challenging task for students.

Having said hat most of the courses a student takes while in a university require writing research or essay papers. A lot of students actually feel overwhelmed and stressed by the procedure of writing research papers, especially when they have to frequently revise their research drafts.

Research Should Start as a Game:

Students will benefit from playing games in the following way:

- ***Affectively*:** Games lower affective filter, encourage more creative and spontaneous use of language, improve communicative competence, increase motivation, and provide fun learning experience;
- ***Cognitively*:** Games provide reinforcement and opportunities for review and extension tasks, and help students focus on grammar communicatively;
- ***Class Dyna*mics:** Games enhance student centricity, instructors' facilitator role, class cohesion, whole class participation, and healthy competition;
- ***Adaptability*:** Games provide dynamism, easy adjustment for age, level, and interests, involve all four skills, and require minimum preparation after development.

Examples of Research Games:

Fun Task 1: **Library Hunt**

Knowing The University Library

- *Library Hunt* is an interesting way for the students to get familiar with the library. It is important that they know the library well as they will be using it on a regular basis when they search for relevant reference.
- It is an enticing and cooperative activity since the team members have to work as one and as fast as

they can to finish the task by navigating the library.

- Students understand that their membership in a learning group means that they either succeed or fail together.

How to Play

- Students are given BINGO card worksheets with items asking for important information about the library and instructed to answer all the questions to complete the BINGO card provided for within a specified time frame.
- Sample numbered questions in the BINGO card worksheet include: In what section of the library can you find the book *Gateways and Skyways towards Developmental Reading*?

Fun Task 2: Solve That Gobbledygook!

Conciseness/Brevity

- Gobbledygook means something that is unclear, incomprehensible or pompous jargon of specialists.
- *Solve that Gobbledygook helps students understand the importance of knowing the actual semantic value of the words they write or even say.*

How to Play

- Students work in pairs and are directed to state the given gobbledygook in brief.
- Observing brevity and conciseness in academic writing are then discussed and students are asked to critique and revise text-types that use kilometric and convoluted sentences.
- They are instructed to reduce the statements such as those found in the following slide into fewer words without sacrificing their meaning.

Fun Task 3: Survey Says

Conducting Surveys

- *Survey Says* teaches the students the concept of conducting surveys.
- This activity provides students initial experience of gathering pertinent data.
- At the start, the survey questions sound intriguing, comical and humorous to make the process more fun and engaging.
- Students required to present the survey results and make interpretations.
- Through this activity, students are introduced to simple data analysis.

How to Play

- Students work in dyads.
- They are given 20 minutes to conduct a survey to 20 respondents outside the classroom.
- Sample intriguing and thrilling survey questions asked include

"Do you like the university library?"

"Do you know the name of the librarian?"

"Have you met the librarian?"

"How many times a month do you visit the library?"

"Is it easy fining the books you are looking for?"

"How fast can you find what you are looking for?"

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The Role of Public Libraries in Creating Innovative Instructional Spaces to Support 21st Century Skills Using Smart Technologies

Sara Al Marzooqi

Hamdan bin Mohammed Smart University
saraalmarzouqi99@gmail.com

Abtar Darshan Singh, PhD

Hamdan bin Mohammed Smart University
a.singh@hbmsu.ac.ae

Edward Robeck, PhD

Salisbury University
ecrobeck@gmail.com

ABSTRACT

Nationally, MOE schools are facing a challenge to meet the 21st Century skills of learners as well as knowledge in the five domain areas of Science, Technology, and Engineering, Arts and Mathematics (STEAM) and high achievement of PISA scores. There is an increasing need for librarians to assist curriculum needs in schools and the national education agenda of UAE, which range from immersive learning, personalised learning, community partnerships and collaborative leadership ideals. The increasing need for the librarian to assume the role of a collaborator to support the above is becoming more apparent as noted in a few emergent studies (McMenemy , 2012; Greef, 2017; Hovious, Van Eck, 2015). Libraries play a fundamental role in our lives; they are more than just a place stacked with books that are read by researchers who have a mission to accomplish. Public libraries nowadays are hubs for life-long-learning, social interactions and professional development. The shift in vision took place after the evolvement of smart technologies that made learning through electronic devices much easier, impactful and accessible. Digital books are now available to read anytime anywhere without having to worry about the number of heady books one should carry on the way to work or leisure. Public Libraries had to adopt this innovative electronic wave by providing electronic databases and social activities that merge fun with learning. However, the role could be extended further to work closely with schools in a systemic way that enables both entities to reach another milestone. Schools, with its formal education, can establish another supportive educational after-school system to empower teachers and students. There have been spontaneous attempts in this regards by teachers themselves, however it is isolated. A more

extensive and rigorous as well as controlled system that all stakeholders, teachers and parents could share, and to provide the opportunity for students to be effective knowledge-contributors is planned and shared in this paper.

Keywords:

Education; Public Libraries; Instructional Spaces; 21st Century Skills; Smart Technologies; Collaborative Leadership.

1.1 Introduction

There is a dissatisfaction towards the school education outcomes that they do not meet the international standards & UAE leadership expectations. On the other hand, there is a low attendance in Sharjah Public Libraries, where 10,000 members are registered but only 3,000 are active. There is a gap in both domains that could be further addressed by research. A project to breach the gap has been conceptualized and the new approach is called "Sa'i سعي" which aims to create innovative instructional spaces in libraries that support the formal education in schools. The project is in line with UAE's vision to focus on the 21st century skills and is flexible enough to be altered and modified for every vision and strategy since it combines both virtual and physical spaces and will re-conceptualize libraries as supportive entities to schools, which means no threats on changing the formal curriculum or school hours or plans. The whole system is planned to be implemented as an informal after school program to further enhance the creative and higher thinking skills of learners. This paper will present a conceptual framework of the project Sa'i سعي with the aim of sharing our initial thoughts and plans and to gain collaborative thinking ideas. The conceptual plan is aim at addressing some of the following research questions with a focus on research question 1.

1) What is a model/framework for 21st Century Libraries as partners to school systems?
2) What are standards/criteria that can be tested and proposed for UAE MOE to be used in collaboration with public libraries?
3) What are the current levels of 21st century skills among high school students in the UAE?
4) Was there a significant difference between high, mid & low ability students who used "Sa'i سعي" for the enhancement of 21st century skills when compared across the different learning environments?
5) What were UAE high school students' perceptions on the use of "Sa'i سعي" in enhancing their 21st century skills?

1.2. Literature Review

Libraries have always been the source of knowledge from time immemorial and are now beginning to change their role into becoming more active and supportive partners in the total learning process. In the late 1800s and early 1900s, libraries and museums shared space, resources, and personnel" (Given & McTavish, 2010). Since that early time the said sharing is still active which means that both informal-learning entities have successfully worked together to deliver knowledge. This

informal education could be connected further to the formal education entities (i.e schools) through the new systematic approach which we are presenting in this paper.

A joint effort between the Association for Library Service to Children (ALSC) and the Public Library Association (PLA), identify five practices which are crucial to children's early literacy development. These are talking, singing, reading, writing, and playing. (Nespeca, 2012) Those five practices could be imbedded in the new system "Sa'i" however with the integration of emerging technological advances, in order to capitalize on the affordances of these powerful technologies.

In Reade's (2017) study, the aim was to employ constructivism, a theory built on the idea that people learn best when they construct knowledge based on experience, when they apply what they've learned, and when they have the chance to test and revise personally generated hypotheses, a theory that demands active learning. A 2011 study of physics teachers showed that students' understanding improved 38% after a switch to active learning from a more-traditional model (Stone 2016). Active learning is the perfect approach to implement in the library with no stress over the teachers who sometimes have to follow certain timelines and curriculum guidance. The free teaching and learning styles the library could offer/compensate any missing elements, in the educational process. Or it could emphasize it further through a different way to reach the same objectives set by MOE and UAE vision.

Now would a new system be enough? Of course not. A collaborative leadership approach from libraries and schools should be adopted to transform the way we learn and teach. Transformational leadership requires creative mentalities that can be flexible enough to adopt the change or, at least, try it. Phillips (2014) argues that transformation leadership is a style of leadership often discussed in LIS education and leadership literature. Transformational leadership requires enthusiasm, creativity, and risk-taking from individual leaders; all of which an organization must possess to "achieve success in the change process" (Mavrinac, 2005, p. 394)

1.3. Research Gap

All the studies that were encountered during the research have not proposed a system that could be followed by formal-educational entities and informal-educational entities. There are several attempts and views but no approach agreed upon so far. This project is proposing a conceptual model that could be tested further.

1.4. Conceptual Model

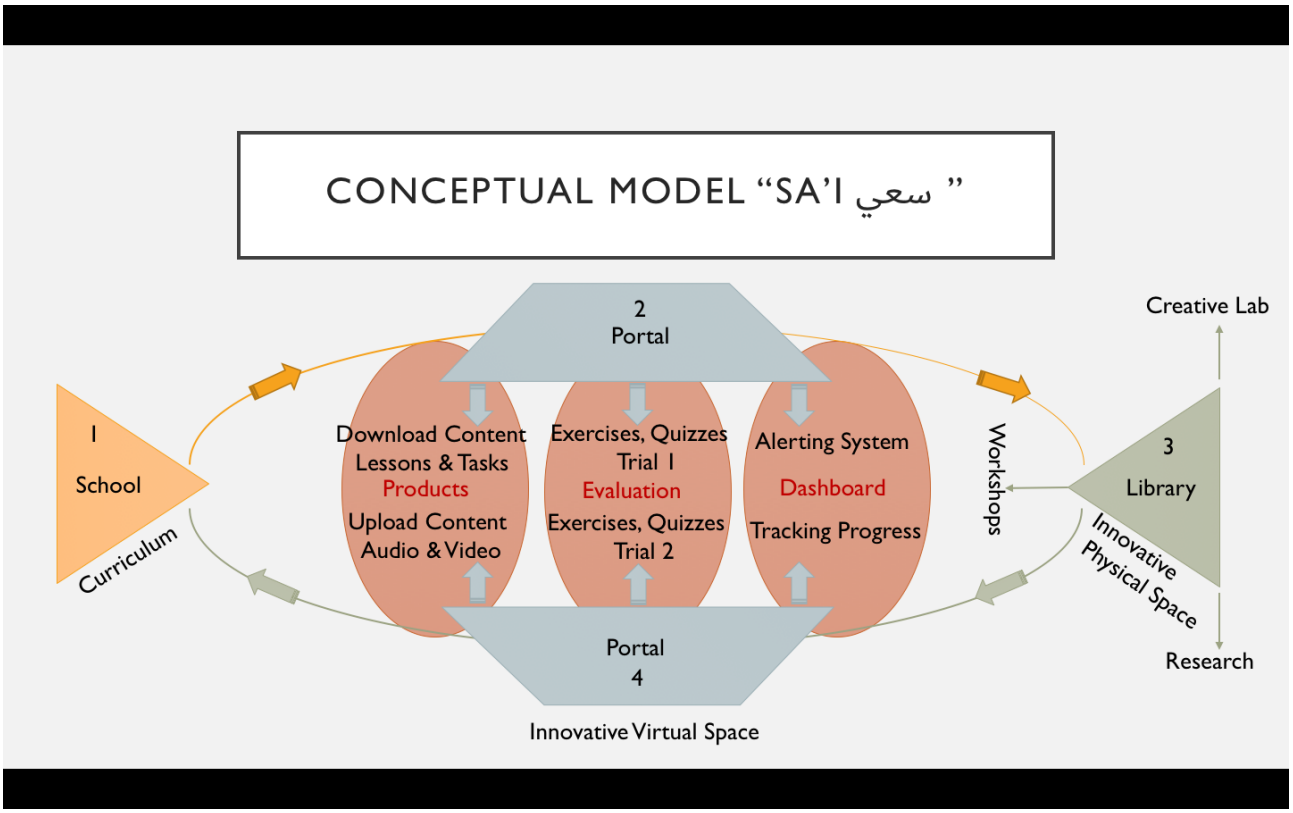

Figure 1. Conceptual Model "Sa'i سعي"

The above figure articulates how schools and libraries could work together in a systematic way that encourages sustainable learning and bridges the gaps in both entities. Since the students get to study the curriculum at school and there is no time nor facilities to explore learning components through more innovative spaces, libraries could fill this gaps by offering two innovative spaces: virtual and physical. The virtual space is basically a digital hub and archive of all teachers and students work curriculum as well as other e-resources that will be useful for the transformational learning process to happen. This is the "Products" section where teachers can upload all the educational materials for students references. There is also the "Evaluation" section which contains quizzes, peer feedback, scenario evaluation etc, that are either taken before and after the library visit or suited to the needs of the evaluation/assessment process. And the "Dashboard" which contains communication tools for students, parents, librarians and teachers to interact, share feedback and get notifications or alerts.

The students then are ready to visit the library to choose which facilities they will use to create a product, They can enjoy the freedom of what to create and how to create on their own pace. They can work individually or within groups under the librarians' supervision and guidance. The

innovative physical spaces in the library are: the creative lab where students can create their audio and video works; interactive workshops where students are free to attend if they want to strengthen their knowledge and write a report about what they learned, and the research center which will enable students to expand their curiosities by researching a particular area under the guidance and support of librarians. After filling certain hours and meeting projects deadlines, students visit the virtual space again to track progress/grades and see how can they improve themselves, they can take more quizzes and teachers can track to before-and-after performances. Finally, and most importantly, the students are able to be knowledge-contributors since they can upload their products and share them with their peers.

The power of this model can be summarized in the following points:

- The informal involvement of teachers, parents, students and librarians is very high. This involvement will reflect on the formal education at school.
- It saves time and efforts on teachers end in terms of what else to do to make the lesson more engaging, since student will be able to practice what they have learnt with a gamification style after the school hours.
- The model is learners-centered. it provides the freedom to the learner to choose the facility and project they would like to work on based on their capabilities and pace.
- The model empowers the learner to be a knowledge-generator.
- The model is making libraries part of the learners' life-style so when they grow up, they continue to use different facilities for life-long-learning process.

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A case study using Disruptive Innovation with an Appreciative Inquiry approach: Teaching Statistics to Female Saudi Arabian Dual-Language Learners.

Lucia-Marie B Ganendran

KEYWORDS: *Statistics education, disruptive education, female, Saudi Arabia, attitudes.*

INTRODUCTION

Undertaking a statistics course can be a source of anxiety for non-Math majors. Statistics involves the study of essential concepts that are abstract and complex, for example, what does randomness mean, and what is a sampling distribution? Is a hypothesis ever really proved? How do you come to a statistically significant conclusion?

More and more, a wide range of degree programs are requiring students to undertake a statistics course. Thus, non-Math majors come to a statistics course out of necessity, typically needing the course to graduate – most of them would never choose to do statistics. These students typically lack a strong background in mathematics. Their anxiety about the subject is often compounded by anecdotal stories of how difficult the subject is.

Added to this is the challenge of tackling the course as an English Language Learner (ELL). To be able to communicate clearly the results of statistical analysis as a whole picture is challenging enough without the added difficulty of using a second language.

Here, I present a case study where I used disruptive innovation as part of the course design. At the same time, I created within the classroom a nurturing and supportive environment using an Appreciative Inquiry (AI) approach. AI is an approach where the focus is on the strengths and possibilities of a process, and the constant 'inquiry' into shared opportunities which can lead to success (Stavros, Godwin et al. 2015).

DATA AND METHODOLOGY

The course used in this study was Statistical Methods, a course designed for non-Math majors. Data were obtained from undergraduate female students from a private university in Eastern Province, Kingdom of Saudi Arabia. Three sections of statistics classes were surveyed with a pre- and post-Survey of Attitudes Towards Statistics (SATS-36, used with permission, CS Consultants, LLC) at the beginning and at the end of the semester. The SATS-36 were scored using the protocol provided. Six attitude components were surveyed – affect (feelings towards statistics), cognitive competence, value of statistics,

difficulty, interest, and effort. In addition, single global attitude items such as the value of statistics in the student's chosen career field, and the student's prior Math achievement were surveyed.

Students also kept a reflective journal where they answered specific questions, designed with an AI approach. Entries into the reflective journal contributed to word clouds which were shown to students.

In keeping with our general aim of the pursuit of 'smart learning' where students are provided with an engaging and relevant experience, I made two major changes to the course. First, I redesigned the course delivery. I wanted to shift focus away from a traditional, rigid mathematical approach which is based on memorization and rote learning, to a more flexible approach based on deep understanding of statistical concepts and a focus on the relevance of statistics in daily lives.

Second, I introduced a series of instructional videos which I created myself. 'Disruptive innovation' is considered to be the introduction of a simpler product to a wider audience (Abel 2013). This was precisely my aim. Students have access to a tremendous amount of content on the web, including instructional videos, but this serves to confuse them even more as they try to sift through the material. The videos I created were based on work carried out in class, using the same language and teaching style that students were used to. The highest demand was to provide solutions to problems, and a total of eight videos were made and released progressively throughout the semester.

Apart from the SATS-36 surveys, students also filled out a course evaluation at the end of the semester. Results from these are also presented here.

RESULTS AND DISCUSSION

In this paper, the results of the SATS-36 pre- and post-surveys will be presented and discussed in terms of the six attitude components.

Results from student evaluations are also presented and discussed in the light of students' grasp of statistical concepts. In particular, I highlight students' reactions to the change from traditional teaching methods, and how they viewed the usefulness of instructional videos created with them specifically in mind.

In addition, students' reflective journals allowed me to track any change in attitude during the course of the semester, and I present these reflections as well.

Finally, I discuss the gain in trust and confidence, and in the changes in attitude towards the study of statistics of this cohort.

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Smart Learning Needs Smart Assessment: Personalized Learning through differentiated Assessment and Evaluation

Steven Coombs & Madhumita Bhattacharya

Introduction to Smart Assessment and Evaluation

This is a position paper conceptually reviewing a new course development proposal as part of a postgraduate certificate award in Smart Assessment and Evaluation aimed at educators working in the UAE.

The course proposal developed aims to foster a greater understanding of the core concept and educational policy of differentiated assessment as a form of Assessment-as-Learning[26] (AaL) and the evaluation techniques and decisions a teacher can employ to regulate a learner's needs and style of learning. Indeed self-regulated learning as a means of empowering the individual learner has been around a long time and first theorized by Bandura (1991) as a means of learner motivation and earlier developed through the theories of self-organised learning by Thomas and Harri-Augstein (1985). These theories were later developed by Coombs (1995) into pedagogical models to support individual conversational learning through ICT support systems allowing for individualized and personalized assessment of learning. The idea that smart learning requires smart assessment assumes the symbiotic pedagogical relationship that links learning to assessment as a form of formative assessment. This approach builds on the concept of "Learning How to Learn" (Black; McCormick; James & Pedder, 2006) and assumes learning as a process that requires support so as to develop higher order thinking and reflective skills. Indeed, the deeper argument that smart learning requires smart thinking was argued by Coombs and Bhattacharya (2017) who maintained that:

"*….smart learning requires smart thinking to underpin the learning process and knowledge outcomes*"

The notion that each individual learner can be systematically supported with the way that they think through learning tasks and activities is further supported by the notion of critical thinking scaffolds (Coombs, 2001) acting as digital scaffolds to support learning plans (Coombs & Chng, 2002) within an heutagogical learning environment (Hase & Kenyon, 2013) that operates in effect as a smart learning

[26] The assumption from various sources is that Assessment as Learning represents the pedagogical policy and philosophy of a differentiated approach, whereas AfL represents the process of formative assessment and learning techniques that can usefully be employed within a differentiated assessment and learning environment.

environment. For such a smart learning environment to prosper requires personalized and differentiated *assessment-as-learning* tasks using digital tools to support the way learners think and construct their new knowledge.

Coombs and Bhattacharya (2017) define the nature of a smart learning environment in terms of differentiated and adaptive learner needs:

"*Smart is therefore achieved through using accelerated learning tools and procedures within an activities based learner centric learning environment. A smart learning environment is dynamic, active and adaptive to the learners needs whilst relative to the process of achieving the desired learning outcomes associated with an overt curriculum task."*

The Nature of Differentiated Learning and Assessment

Such a differentiated learning approach can take the form of mixed ability teaching integrating both those with learning disabilities as well as gifted and talented individual learners. Differentiated assessment assumes a differentiated pedagogical approach of student-centred learning (Boud, 1995 & 2000) whereupon the *new role* of the teacher is to both regulate and actively facilitate the learning of each individual learner based upon their learning needs linked to personal interest, preferred learning styles, learning capability and a personal learning profile of progress and achievement.

Differentiated assessment illuminates the *ongoing learning process* through which teachers gather learners' data before, during, and after 'instruction' from multiple sources so as to identify learners' needs and strengths. Learners are differentiated in terms of their knowledge, skills and capabilities through bespoke learning tasks. This is supported through teacher intervention in the form of both feedback and feedforward as dynamic assessment so as to support the ongoing formative learning task. One might further argue that formative assessment processes need to be integrated into formative learning tasks in order to achieve useful assessment-for-learning outcomes. If this can be achieved at the individual level and at the pace of each learner then we have a de facto personalized learning environment achieving the educational policy goal of assessment-as-learning. This implies that greater knowledge and decision-making can be gained through sensitive and dynamic use of personal learning profiles to support personalized learning. This differentiated and personalized approach towards learning and assessment can be supported with *learning analytic data* (Bhattacharya & Coombs, 2017) from digital personal learning profiles of progress which to inform real-time decision-making as feedback and feedforward to the learner via either the teacher and/or directly from a smart learning environment support system. Such an educationally inclusive and differentiated pedagogical approach can be supported through delivering a *customized curriculum* enabled through an online smart learning and assessment environment.

Consequently, Hamden Bin Mohammed Smart University (HBMSU) is currently in the process of launching a new

postgraduate certificate award in Smart Assessment and Evaluation aimed at in-service teacher professional development in the United Arab Emirates (UAE). Through various courses and activities the participants, as professional learners, will be invited to *rethink* how an existing unit/module from their own teaching curriculum can be re-designed according to the principles and strategies of differentiated assessment and learning. This can be achieved and supported through using a digitized Smart Assessment and Intelligent Learning environment (SAIL) as described in figure 1. Figure 1: The Systems Thinking Model presented in figure 1 adopts a Purposes-Strategy-Outcomes-Review conversational learning template (Harri-Augstein and Thomas, 1991) to help identify the learning design processes involved. Such a smart system supports personalization of the learning experience through negotiated learning pathways and bespoke assessment tasks as part of developing and recording the learner's personal learning profile. To support and sustain the staff development of the in-service participant teachers a new group learning professional forum will be adopted. This will utilize a professional learning Smart Assessors Community of Practice forum based upon Wenger's (1998) best practice principles of group and community based learning.

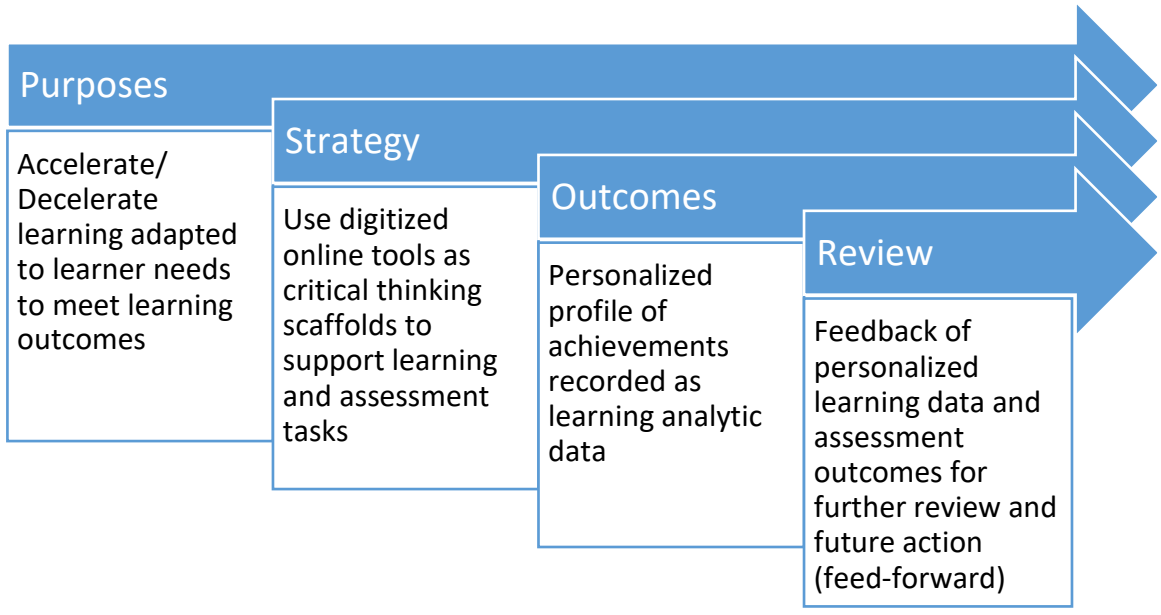

Figure 1: The Systems Thinking Model of the Smart Assessment and Intelligent Learning environment

The Proposed Course Learning Design for Differentiated Assessment and Evaluation

The smart assessment and evaluation program has been designed to upgrade the knowledge, skills and competencies of in-service teachers in the areas of assessment and evaluation. Assessment methods and processes has evolved with time, initiated by the need to support learning, hence the rationale towards both assessment-for-

learning and the differentiated approach of assessment-as-learning. Together with this pedagogical shift in thinking learning technologies have evolved to support new ways of enabling teaching and learning. As technology tools and affordances that support learning improve at a phenomenal rate, it is also important that teachers are continuously upskilled as part of their professional development. Combining the new pedagogical approaches towards assessment with appropriate learning technologies addresses the 'smart' aspect of assessment. This program will ensure that in-service teachers will master the basics of assessment and apply them in authentic and practical environments together with the application and use of innovative and smart technological tools. The program has been designed in such a way that it supports life-long learning using competency-based learning ideals linked to accredited continuing professional development (CPD). The diagram in figure 2 represents the flexible life-long learning program model, whereby in-service teachers will be able to progress according to their needs of continuous professional development over a period of time.

For the proposed course in Differentiated Assessment and Evaluation the learning outcomes are as follows:

1. To critically evaluate the role of teacher/instructor as a regulator of learning and facilitator of an online smart learning and assessment environment.
2. Critically evaluate the educational literature associated with differentiated pedagogical approaches and link this to assessment and learning.
3. To understand and evaluate the role and educational nature of personal learner profiles to inform decision making regarding individual learning pathways and assessment tasks.
4. Reconceptualise an existing unit/module of teaching curriculum as a new smart learning design for delivering differentiated assessment and learning environment.

The proposed professional learning assessment strategy:

A. Participation through feedback evidence utilizing a professional learning Smart Assessors Community of Practice forum. (20%)
B. Research Project Report (RPR) proposing a re-engineered curriculum adopting differentiated assessment and learning strategies (40%)
C. Presentation of RPR with peers and key invited stakeholders (20%)
D. Professional Learning evaluation report linked to a Personal Reflective Log (offline) and Personal Reflective Blog (online) of curriculum development coursework. (20%)

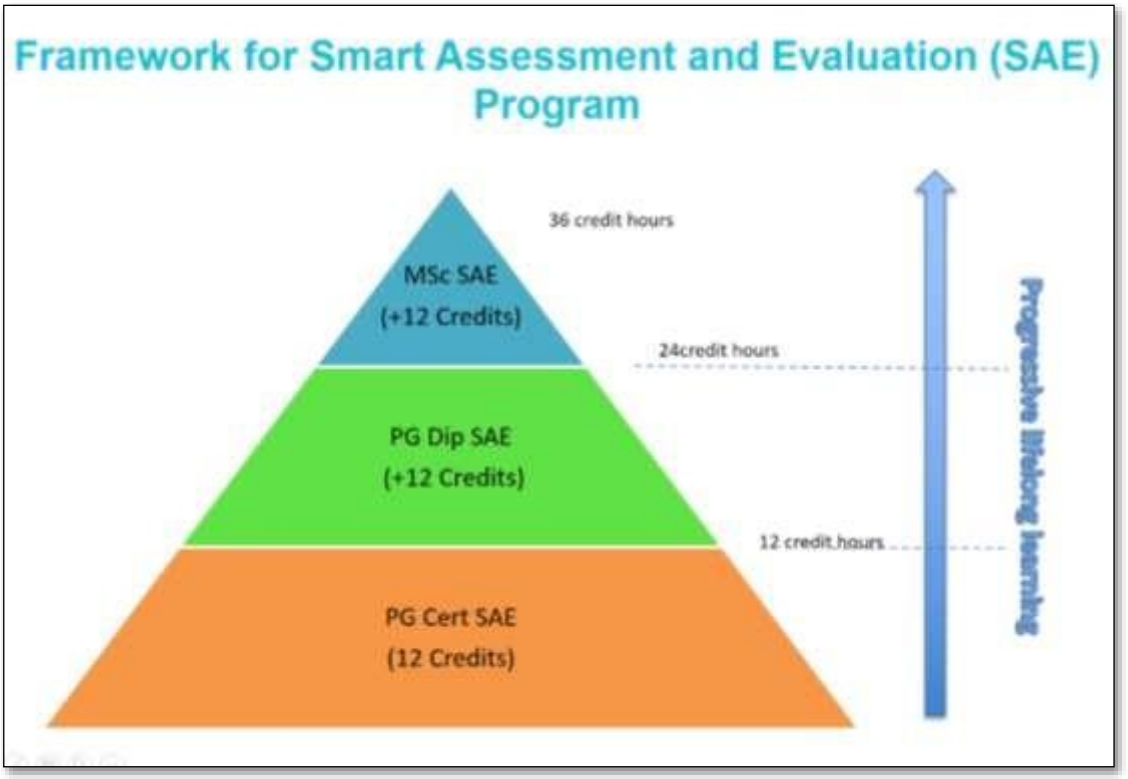

Figure 2: The proposed progressive award structure for the Smart Assessment & Evaluation Program **Conclusions and Future developments**

This research position paper reviews the rationale behind the new postgraduate award in Smart Assessment and Evaluation. In particular it looks at how teachers as participants to the proposed new course in differentiated assessment and evaluation can reconceptualise an existing unit/module of their teaching curriculum as a new smart learning design for delivering a differentiated assessment and learning environment. It is intended that case studies of these re-thought courses will be the subject of future research papers and published articles.

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Note: Working Paper subject to being updated and revised (formatted)

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Teacher Education

María Carolina Chevalier Seijas

My idea to work in the IA11 Innovate, Disrupt and Transform is to base myself on the research that I am developing for my doctorate (University of Deusto, Bilbao Spain with a Cátedra UNESCO Santander Scholarship), joining it to the knowledge obtained in the Diploma. Therefore I propose to address how to carry out the formation of the Diploma in Curriculum Design and Development, counting my own experience as coordinator of the Degree in Initial Education of the Catholic University of Uruguay, my role as adviser in the processes of change of different Institutions Educational, my role as an exhibitor in seminars, courses, conferences, etc., and my role as a professor at the Catholic University of Uruguay and the Benemérita y Javeriana Normal School of Jalisco Mexico (I am a teacher of the Master's Degree that was born of the Diploma in Design and curricular development).

My main idea of work would be exactly, starting from my PhD thesis:

Teacher education is the key to generating the changes that the education of the world needs. You can count on excellent educational policies, a lot of money invested, the best facilities, didactic materials and resources, but it is the teacher in the classroom that marks the quality of the teaching and learning processes. He is the fundamental guide and mediator of the didactic situations that develop within the classroom. Within the teacher training, it is considered that the practices are fundamental as the backbone of the whole process, which is why it is essential to improve and optimize them, in relation to the theory.

To work as explained above, several questions regarding teacher training are of great importance:

- The curricular framework (with its theory / practice relationship).
- The evaluation of curricular management.
- The development of the necessary capacities for the implementation of said curriculum.
- The evaluation of the teacher's task, with special emphasis on the selfevaluation of education professionals (but not forgetting the co and heteroevaluation).
- Innovative proposals for teacher training.

This, as a start of an interesting discussion about central issues of education in general and possibilities for innovation. Each of the detailed points is a conference in itself.

The UUNESCO Curriculum Diploma Strategy in the context of Smart Learning (Extended Abstract)

Hugo Labate

Learning Design Director,
Ministry of Education, Argentina.

Current Diplomas offered by IBE/Unesco (IBE-UNESCO, 2016) in partnership with local universities in 4 regions assume that the main actors in curriculum design and development are national staff usually working at the ministries of education and/or universities, delivering quality curricula for the national states.

However, the introduction of ICT and specifically the advances in Smart Learning Environments (SLE) are shifting the curriculum landscape (Singh and Hassan, 2017), whereby public educational provision by state schools face increasing competence from technology providers in the private sector.

The monopoly (in the sense discussed by Lucas, 1980) held by the state in curriculum matters, a product of the nation-building processes that for many countries started in the 19th century (and still a work in progress for countries in several regions), is rooted in a policy mind-set that sees the curriculum as a pillar for building national identities - even when this happens through a process not lacking in conflict, especially where divergent visions of the common good and ethnic tensions prevail- and as a way to guarantee the viability and stability of the country.

In that sense, the traditional providers of support materials for learning, e.g. the printing houses, teachers' associations and universities, have been oriented by the curriculum mandates, and in many cases subjected to formal approval from the state curriculum authority. Nowadays, the design of SLE is undertaken mostly by technologically-oriented private companies, with a focus in organizational learning for the corporate environment, but with increasing presence in the compulsory education system by providing learning platforms that bypass the role traditionally assigned to teachers as discussed by Tengku (2014), especially in more dynamical private-sector institutions that anticipate the shift of the learning paradigm from a curriculum-centred to a learner-centred approach.

Sawyer (2008) foresees that environments that prepare learners for a knowledge intensive society will look very different from the standard model, what makes us assume that this shift where each student potentially follows a personalized learning experience suited and tuned to his/her personal needs and interests, is leading to a diminishing role and influence of national curricula.

The challenge implied by this process regarding the work of curriculum experts at national / state levels, is to take stock of

these processes, and develop answers for the following questions: in a SLE-based education, who will assess students' learning to ensure they meet national standards? How will student learning be certified, in relation to learned content and achieved competencies? How will the quality of the SLE and their providers be evaluated? What technical expertise is needed to develop appraisals of smart learning products, and be able to recommend them to national authorities for purchase and/or implementation? What kind of investment in SLE is sound and sustainable? What kind of teacher initial and in-service training might act synergistically with the opportunities afforded by SLEs? How can equity in learning results be achieved by all, to ensure democratic access to knowledge, within a diversified curriculum provision?

A revision of the Diploma focus might be the opportunity to link participants into virtual think-tanks where these ideas can be debated and turned into practical proposals to the attention of policymakers, including crossover activities with other Unesco initiatives (e.g. Mobile Learning Week) to allow a renewed conceptual production on the tensions between formal curricula and personalized learning.

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Perceptions and Practices of Islamic Studies Teachers in the Integration of ICT in Public Schools in Ras AL Khaimah in the United Arab Emirates

Gubran Saif Al-Gumaei

Learner at Hamdan Bin Mohammed Smart University

200004780@hbmsu.ac.ae

Introduction

This study examines the perceptions of Islamic Studies teachers, in the integration of the Information and communication technology (ICT) in a public school in Ras Al-Khaimah, UAE. Five questions drove this study to achieve its goal. A review of the relevant literature revealed that there are very limited studies, if any, on Islamic Studies teachers' perceptions of using technology in their classrooms. The present study investigates Islamic Studies teachers' perceptions in integrating ICT, and the anticipated challenges faced when using ICT in the classroom. The main aim of this study is to investigate the perceptions and practices of Islamic Studies teachers in public schools concerning utilizing ICT in their classrooms for more effective teaching and learning. Five main questions guided this study:

1. What are the general perceptions of Islamic Studies teachers in the integration of ICT in their classrooms?
2. What are the current practices of Islamic Studies teachers in integrating ICT in their classroom?
3. What are the perspectives of Islamic Studies teachers on the advantages of ICT integration in their classrooms?
4. What are the challenges and barriers of Islamic Studies teachers integrating ICT in their classrooms?
5. Is there a difference in the perceptions of male and female Islamic Studies teachers in the integration of ICT in their classrooms?

Problem statement

It is obvious that there are modest attempts and a limited practice of integrating technology in the classroom by teachers of Islamic Studies in the public schools in the UAE. However, they need to understand the role of technology and its significant impact on learning. In addition, they need to inventively apply effective ways of integrating technology into the classroom. Numerous studies conducted in the UAE have focused mainly on Science subjects, English Language and Mathematics. It's noteworthy that Alhumaid (2014) examined the perspectives and usage of technology by Arabic language teachers' in the UAE. However, the literature on integrating technology in Islamic Studies classrooms is very limited. Thus, this

situation has been the reason behind conducting this study.

Methodology

This study used a mixed method research as the research design. It was defined as combining qualitative and quantitative data collection in a single study. this method aimed to take advantages of the strengths of both approaches. As Denscombe (2010) indicated that it is useful to apply more than one method, so that each method supports and give credence to the other.

To answer the five questions of this study, two instruments were employed to serve the objectives of this study in collecting the required data from the participants. The first instrument was a questionnaire which was developed by the researcher aimed to collect quantitative data. The questionnaire was chosen because it is considered a quick and efficient way to obtain information from many participants (Davi Ngo, 2012, as cited in Alabd, 2014). It consisted of 58 items distributed on four parts that focused on the research questions. The second instrument is semi structured interviews which enabled the researcher to gather in depth qualitative data related to the topic. The sample of this study is 150 teachers, which they equal the accessible population. From this number, 62 teachers participated in the study. Twenty-four (24) male teachers responded to the questionnaire; this represented 16% of the sample. In contrast, 38 female teachers responded to the questionnaire, representing 25 %. Also, The participants in the interviews were eight teachers represent 13 % of the participants in the study. The quantitative data was analyzed by using SPSS software. The Thematic Analysis (TA) approach developed by Braun and Clarke (2006) was used to analyze the qualitative data of the interviews. According to Braun and Clarke (2006) TA is "a method for identifying, analyzing, and reporting patterns (themes) within data"(p.6).

Results

To answer the first question, the mean was calculated which measure the general perceptions of Islamic Studies teachers towards the integration of ICT in their classes. The teachers' responses were represented by their agreement to a large extent on all items in the first part of the questionnaire. For example, the teachers liked using technology in their work with a mean score of 3.72. The item "using technology is essential to facilitate the learning and teaching process" had the mean 3.70. The analysis of the second part about the practices of the teachers showed that the teachers' responses to the questionnaire confirmed the possibility of integrating ICT significantly in the context of Islamic Studies for most of the items, noting that the general sum of the mean was 3.2. The responses to the part three about the Advantages of ICT Integration in Islamic Studies, showed that the teachers agreed in their perceptions on the advantages of using ICT in the teaching and learning process. Also, The item "facilitates communication with colleagues and students", ranked as the highest benefit, follow by "contributes in making classroom instruction more interesting and motivating", and "used to search more sources to enrich the Islamic Studies curriculum". The teachers' responses to the questionnaire show that the challenges to the integration of ICT in Islamic Studies

were categorized using three levels, namely, “it hinders me very much”, “it hinders me”, and “it does not hinder me”. The item “Absence of reward systems/ incentives” was ranked as the first challenge that hinder the teachers. To answer the fifth questions, t-test was conducted to evaluate and compare whether there was any statistically significant difference between the mean of teachers’ responses based on gender. The statistical analysis showed that there is no statically difference between a meal and female teachers related to their responses to the Four Parts of the questionnaire. The table below shows the result of P value for the four parts of the questionnaire.

Table 1: P-value significance of the four parts of the questionnaire

The part	P-value	Significance or Not
Part one: General Perceptions of Islamic Studies teachers in the integration of ICT	.128	Not Sig
Part two: Practices of Islamic Studies teachers of integration ICT in their classroom	.166	Not Sig
Part three: Advantages of ICT integration in Islamic Studies	.284	Not Sig
Part four**:** Challenges and barriers of integration ICT in teaching Islamic Studies	.289	Not Sig
The total tool	.452	Not Sig

Conclusion and recommendation

This study revealed that The general perceptions of Islamic Studies teachers are positive, whether they are male or female. The analysis results showed that there is no statistical difference between the viewpoints of the teacher attributed to gender. The findings of the interviews showed that the interviewees agreed on their perceptions related to the five questions. The teachers demonstrated their desire to improve and increase their use of technology integration in their practice. The results showed that there is a lack of the training programs in terms of integrating technology in the Islamic Studies context. Based on the findings of this study, numerous implications could be taken into consideration. First, there is a need for the teachers to train in diverse ways, to gain the appropriate knowledge related to technology. Second, the school administrations should provide teachers with the necessary training and making a self-assessment for integrating technology. Third, teachers have to upgrade their knowledge and acquire new skills on two sides, pedagogy and educational technology. Finally, the educational awards

in the UAE should motivate the teachers to integrate the technology and reward the teachers when they create best-practices regarding integrating ICT in their classroom.

Keywords: Islamic Studies, ICT, Perceptions, UAE

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A Design-Based Research Approach for Educational Innovation: Sustainable Learning Technologies as the Alternative Holistic Paradigm Antithesis of Disruptive Technologies

Professor Madhumita Bhattacharya & Professor Steven Coombs

New Paradigm Solutions Ltd.
New Zealand

Hamdan Bin Mohammed Smart University
Dubai, United Arab Emirates

The personal and organisational nature of disruptive technologies

This article attempts to make us think how we could create technology-enabled environments to become more user friendly, acceptable, customer oriented and sustainable. If innovations are thought through and design based then it is sure to succeed with wider consensus of the users including students, teachers, educational administrators etc. This is to be compared to the disruptive and unplanned fast introduction of any technology into education for fashionable "trending" marketing reasons, whereupon students and teachers are usually the casualties due to a lack of proper preparation and necessary organisational investment to help enable sustainable change. The issue is the social policy of enabling people to embrace and manage change rather than react negatively or poorly to unplanned disruptive change, i.e. an unplanned disruptive technology can lead to disruptive social patterns of change within organisations causing negative impacts.

A Customisable Design-Based Iterative Research Approach of Educational Innovation

In this section the authors argue the basis of introducing a customisable design-based model of educational innovation that is achieved in practice through a series of iterative steps based upon systematic reflection (Bhattacharya & Dron, 2009). The design-based research (DBR) model as compared to empirical/predictive research approach is illustrated in figure 1 based on the framework by Amiel & Reeves (2008).

A further comparison of DBR and Action Research has been provided by Anderson & Shattuck (2012). The distinguishing feature of DBR is that reflection occurs at all stages of the research process and unlike action research DBR involves a wider collaborative team as opposed to a lone action researcher doing all the work. However, both action research and DBR share a pragmatic approach to effect social change and deliver impact.

In this research paper the authors have adopted the DBR approach to demonstrate

how technological innovations can be introduced as a sustainable and improved technological solution instead of a short-term and temporary disruption. A classic definition of disruptive technologies given by business dictionary (2018) is:

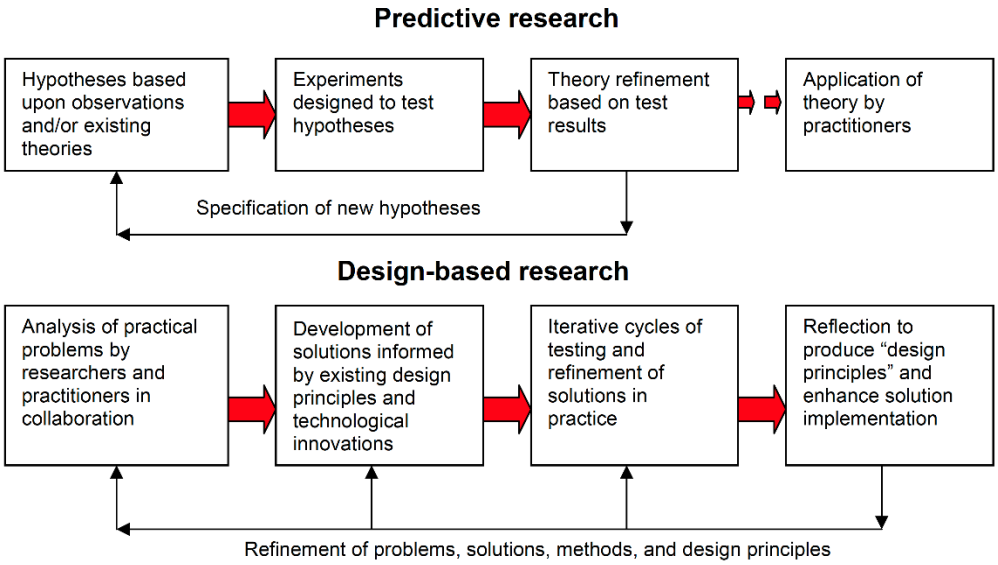
New ways of doing things that disrupt or overturn the traditional business methods and practices. For example, steam engine in the age of sail, and internet in the age of post office mail.

Therefore, any disruptive technology becomes a game changer, radically moving the landscape towards new markets or educational opportunities previously un-thought of, e.g. Open Educational Resources (OERs) have challenged the control of content to a more open access approach to knowledge. Disadvantages can include a lack of quality control and standards in general as the rest of society struggles to keep up with the new initiative and its social impacts, e.g. the internet brought with it unanticipated problems such as cybercrime.

However, this article looks at not so much the nature of a disruptive technology and its immediate social impacts and ensuing risks, but instead how new and emerging technologies in general can be normalised and adopted in a useful and sustainable manner. Thus, we argue the case for sustainable learning technologies as the antithesis of a disruptive technology. The authors maintain that technological change is inevitable, but usefulness is at the heart of whether it will be sustainable or not.

The authors postulate that:

The design based research process can act as a filter to all disruptive technologies for determining the future sustainability, improvement and ultimate useful application of emerging learning technologies.



The above postulate also provides the basis for educational innovation and the role of technologies. The improvement process that comes with DBR can be understood through a continual analysis of reflective data. This is obtained from iterative engagement with practical problems and

issues connected to technological change and its social impacts on practice.

Figure 1: Predictive versus Design Based Research (Amiel & Reeves, 2008)

Two typical examples of a customised design-based research approach for educational innovation are explained in the following two cases. The first case considers the role of ePortfolios as a disruption to contemporary patterns of educational assessment and how to implement institutional change. The second case reviews how the rethinking and repositioning of a Professional Masters Programme challenged the traditional assumptions of delivery by putting the locus of the curriculum into a work-based setting linked to practitioner research for enabling authentic curriculum development.

Case 1: ePortfolios in lieu of the Postgraduate Comprehensive Exam

Introduction of ePortfolios in lieu of Comprehensive Examination for graduating from a Master's Program.

First-of-all, we need to discuss and debate the rationale for this change or so called disruption to professional practice. Of course, this disruption is innovative but then will it be a sustainable solution and how should it be implemented so that it does not appear as a disruption to all concerned, e.g., faculty, students, administrators, management, accreditation etc.? How can we ensure that the change not only maintains the quality, but rather that it might enhance it, and prove to be advantageous to all concerned. The proposed change is intended so as not to increase the workload of all people involved. Therefore, the systematic approach of its introduction started with a pilot project where a group of four faculty members and one instructional designer worked with five students (volunteered) who were about to appear for the Comprehensive Exam and instead opted for Developing ePortfolios as part of their final capstone project.

The team leader (1st author) received a grant to work on an R&D project for introduction of ePortfolios in the graduate programme. The team leader with two other faculty members and one instructional designer initiated the pilot project. The different steps and key stages of the design process has been illustrated in Figure 2.

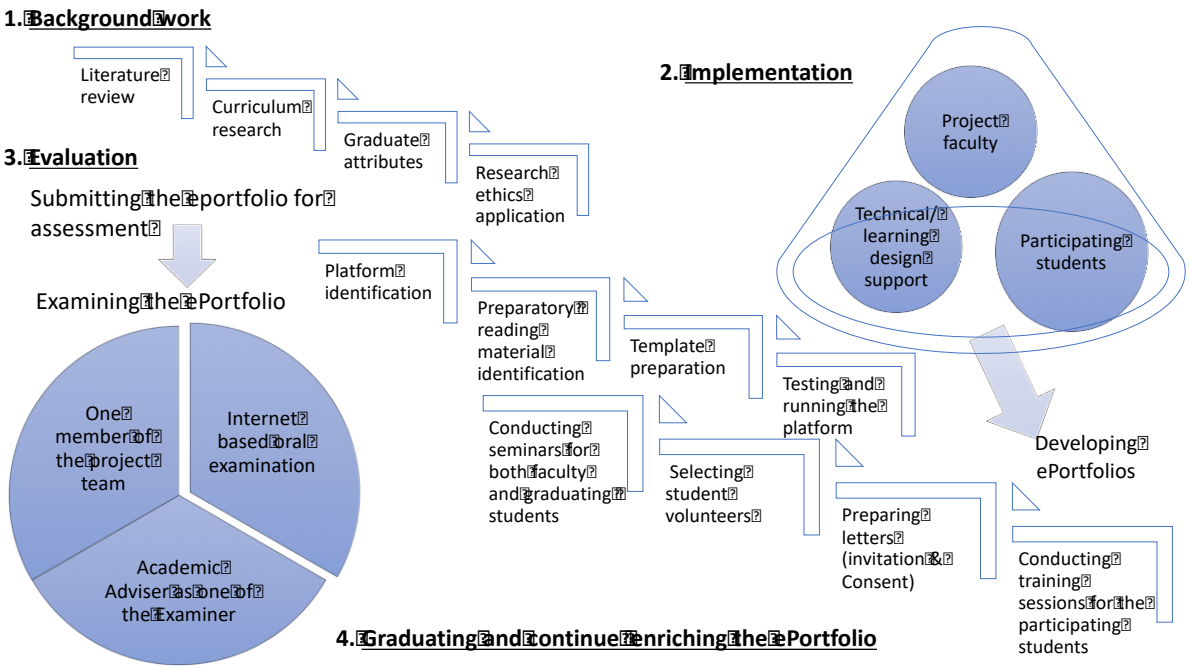


Figure2: Stages of a design-based approach for introduction of ePortfolios

Currently the above mentioned ePortfolio project in case 1 is considered as the main asset of the Master's Program it was applied to and became the key selling point for the program based on word of mouth and personal students anecdotes' and experiences.

Case 2: A new work-based Professional Learning Curriculum

This case considers how a postgraduate accredited professional masters programme was innovatively designed to validate the work-based projects of teachers in schools. Interestingly, this new approach towards work-based accredited continuing professional development (CPD) (Coombs & Penny, 2004) was considered to be a significant break with the traditional delivery methodology of university masters programmes with students becoming professional learners enquiring into and experimenting with their own practice (Coombs & Sorensen, 2010).

This disruption of normal practice oriented around the fact that the locus of this Masters curriculum was based within the workplace of teachers and other practitioners, i.e. their institutions and organisations respectively. Another unique aspect of the learning design of many of the courses was that they were validated as a content-free framework, whereupon the content was negotiated by the enrolled professional learners, e.g. a work-based learning course based upon an action research design requiring a unique real-life authentic curriculum development project, as illustrated in figure 3. In practice the professional masters programme designed impactful projects as part of accredited fieldwork. However, due to the

careful design of the professional masters programme with all the key community stakeholders involved the introduction of this innovative form of CPD was carefully planned and hence, caused little disruption in practice. Teachers were carefully supported through eLearning technologies to both leverage and critically manage curriculum change within their own workplace through well-prepared action research projects.

One of the new mandatory modules in the Professional Masters Programme was called Learning and Knowledge Technology (ref) that introduced participants to the use of online critical thinking scaffolds to support action research fieldwork on an ongoing and sustainable basis. Consequently, it was only the validated masters process that was disrupted, not the professional working lives of research practitioners as change-agents of their own practice.

The central disruption to the university was the challenging of assumptions such as What is the purpose of a Masters program? This led to a major rethink with a change of locus of moving a Masters programme from the campus into the mainstream workplace as a means of both validating and leveraging social change with consequent impact within the professional community concerned.

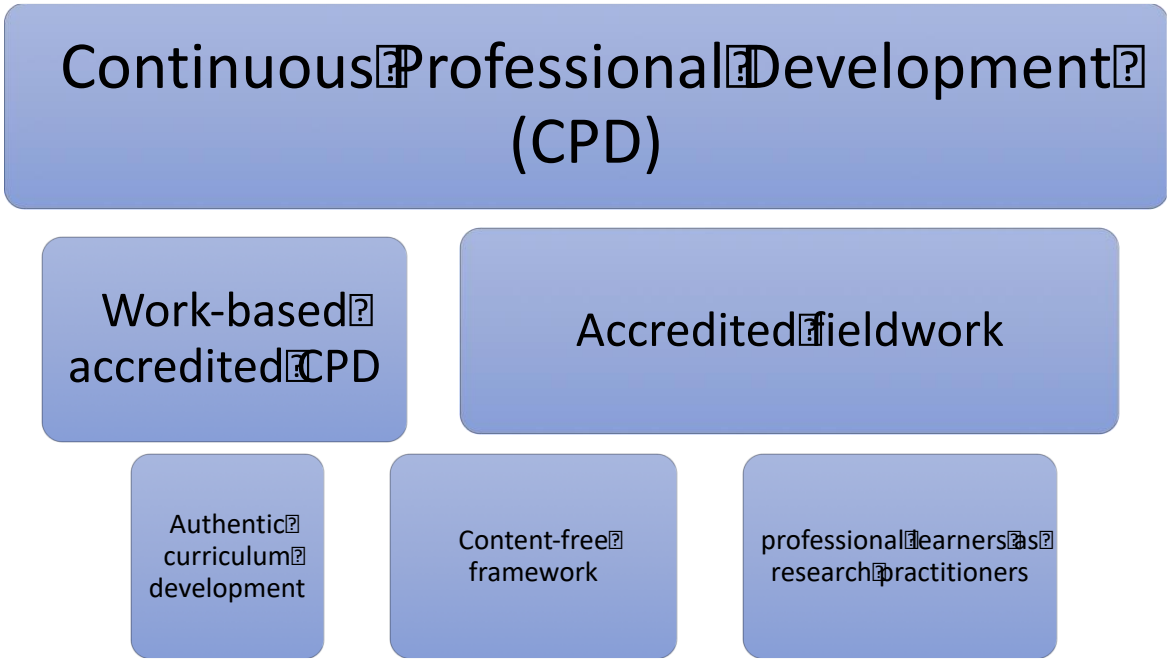


Figure 3: Work-based accredited CPD as curriculum change via practitioner research

A Design Based Framework for Sustainable Organisational Change and Practice

The introduction of any new technology that changes organisational practice acts as the catalyst of a social policy change and requires careful implementation. The how, why, where, what and when a technology is first introduced to new users within an organisation and the level of social investment made determines the quality of adoption and sustainability of the technological change and permanency of the ensuing paradigm shift in professional thinking and practice. For example, where technology is used to support learning and it is properly designed to cover all aspects of user-friendliness, professional development support etc., then it can be deemed as a sustainable learning technology as described in the previous postulate.

Whereupon, the change transition becomes permanent and adopted as the new wisdom and curriculum practice. Senge describes such a process as being *creative tension* towards enabling sustainable organisational change and went on to argue the essential tenets underpinning the basis of a learning organisation (Senge, 1990).

Concluding Remarks

When education is considered as a business instead of a social responsibility we interpret the technological innovations as being disruptive as per a classic "market-driven" understanding of disruptive technologies. Talking about OER has little global meaning when the channels of communications are intentionally disrupted through national policy. Unfortunately, in the 21st century there are still some countries trying to ban VOIP and video conferencing open source platforms and thereby causing a huge social disruption in some people's lives. The global opportunities for sustainable learning technologies are therefore asymmetric depending on where you live. Disruption is only acceptable when it becomes a cost-effective better solution to former extant practice and therefore sustainable into the future. A design based approach to research acts as both moderator and enhancer to emerging learning technologies such that they might become sustainable towards new opportunities to help improve social circumstances through the new work of education.

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Blockchain: solution or threat to educational institutes! Smart Learning Track; Re-shaping the Future of Smart Learning.

Wassim A. El-hajj

Steven J Coombs

HBMSU – UAE.

1. Introduction

This exploratory study looks at some specific contemporary issues facing the higher education sector in the UAE and then showcases how Blockchain technology may provide a solution for such challenges. This study is still an undergoing work and is exploring how emerging new technologies will disrupt our current educational delivery setups. Herewith, the study reviews the technical description of the Blockchain technology in a simplified manner, in an attempt to give a broader understanding of its conceptual framework and potential applications towards higher education institutions (HEIs). This research position paper sets out to describe how Blockchain technology can be used to solve a pressing problem facing the higher education and wider public and private sectors in the UAE, namely: a fast, reliable and digital e-service for updating, verifying and logging every individual's set of qualifications for prospective employers and students seeking entry to HEIs for further study.

2. Scope and Purpose

The purpose of this study is to introduce Blockchain technology in a simplified manner to the wider academic audience, whilst at the same time focusing on the following challenges facing the higher education sector in the Arab World, whereupon Blockchain technology can provide a potential solution:

- Authentication and validation of the qualification and Awards system.
- Logging, accessing and safekeeping of individuals' qualifications.
- Reduce the opportunities for fraud and misrepresentation of qualifications
- Providing a "paperless' joined-up e-Government process that links the qualifications system of universities in the UAE with the Ministry of Education's accreditation and attestation services

3. What is a Blockchain?

There are various descriptions of the Blockchain technology, but all share the same base attribute that it is a distributed

ledger of time-stamped and authenticated blocks of transactions or data. The data is verified and encrypted using advanced cryptography.

Sharples M., Domingue J. (2016), defines it, as "*a distributed record of digital events. It is a long chain of linked data items stored on every participating computer, where the next item can only be added by consensus of a majority of those participating. There are public Blockchains that anyone can access and potentially add to, and there are private Blockchains used within an organization or consortium."*

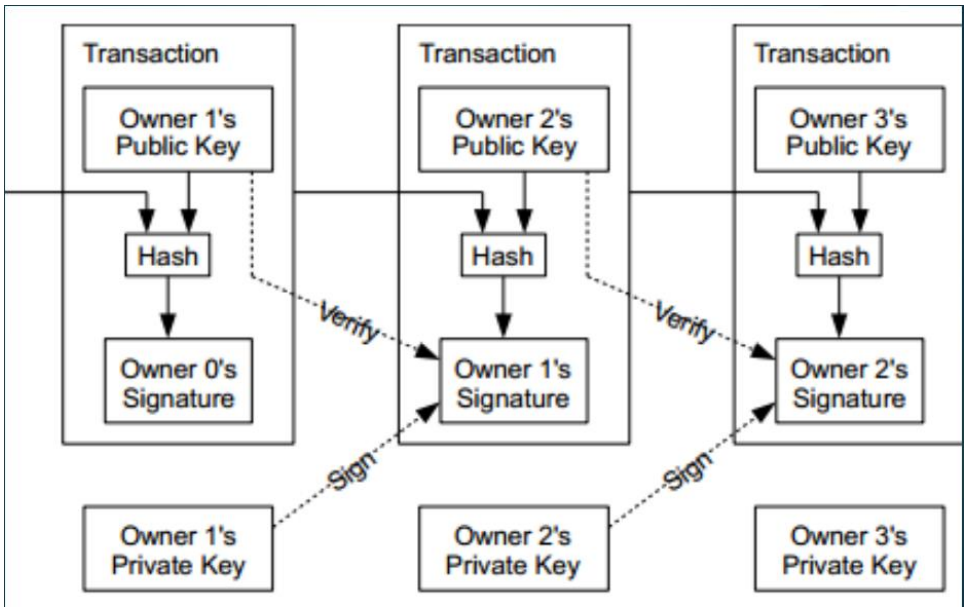

Figure 1: Chain of Transactions. (Andy Wang. 2016).

4. Some Key Challenges facing Digitization in Higher Education

There are many challenges or let us say opportunities for Blockchain technology in the higher education sector just like any other sector. However, for the scope of this study we are focusing on the following opportunities:

- Authentication and verification of qualifications using Blockchain technology.
- Accessing and safekeeping of qualifications through digital solutions.

4.1 The case for Authentication of qualifications

All universities need to verify and authenticate employees' qualifications and records of accomplishment. The current process to achieve this is cumbersome and time-consuming, especially in the Middle East and UAE. This is because many of these countries (except, Bahrain, Oman, and Morocco that are member Countries – as on August 2016) are not participating member countries in the Hague Apostille Convention. The complete list is available on the international apostille website:

http://www.internationalapostille.com/hague-apostille-member-countries/.

The Hague Convention (on October 5, 1961) abolished the requirement of legalization for foreign public documents, by reducing the formalities of legalization to just delivering a certificate in a prescribed form, entitled "Apostille". The authorities in the member country issuing the certified document shall place an Apostille on it (in French: apostille: means certify or authenticate), which is dated, numbered and registered. This can be later verified simply by simply requesting a verification from the authority that delivered the certificate.

The full text of the convention of 5 October 1961 Abolishing the Requirement of Legalization for Foreign Public Documents, can be found here: https://www.hcch.net/en/instruments/conventions/full-text/?cid=41

Figure 2: Hague Apostille Member Countries (http://www.internationalapostille.com/hague-apostille-member-countries, 2017).

This means that for the UAE all other documents recognized by foreign Ministries of Foreign Affiars have to be verified and attested, whereas Hague Treaty HCCH members do not require this process. Consequences as cases in point are a couple of university professors whom have been interviewed for this study. They

are working in the UAE in various universities for years, but are still following on the process of authenticating their PhD qualifications as their terminal degree. A very time-consuming and expensive process for all concerned. The current process is not effective and efficient because of system delays to completing this process as a means of combating fraud. However, we know from the banking industry that Blockchain solutions have enabled global access of banking services for everyone involved including those in countries that are non-HCCH members. Can the same SMART solution be applied to the education and training qualifications sector for greater global mobility and knowledge transfer of specialist workers etc. Both banking and education sectors require verification and authentication of individual identity and related document work. However, the banking sector has an effective and efficient digital solution by using Blockchain technology

As an example of implementing the Blockchain technology in the banking sector, Ras Al-Khaimah Bank (RAK Bank) in the UAE, tied up with Ripple, which has enabled *"the launch of instant, frictionless, and secure money transfer services through … RAKMoneyTransfer (RMT) to Axis Bank account holders based in India. These live retail remittance payments from RAKBANK to Axis Bank reach their destination account in seconds and with end-to-end visibility over the journey of the payment."* (http://wam.ae/en/details/1395302648627, 2017).

4.2 Accessing and safekeeping of certifications

Another case the authors would cite is that whilst visiting the registration department in one of the universities in the UAE, a learner entered requesting for his original certificates. The reason was that his country consulate refused to accept original copies that were duly stamped and insisted in having all originals. Unfortunately, it seems that he had misplaced hard copies of some of his original certificates and was not able to locate them.

Furthermore, at present one of the problems for Syrian (Non HCCH member) National refugees hoping to resume their education in Europe is getting verification from their universities back home, or even requesting for authenticated copies of their certifications. Another case as Professor Domingue (David Matthews, 2017) pointed out, *"the Blockchain could also thwart politicians or other public figures who lie about their credentials".* An example is India's Prime Minister Narendra Modi, who faced repeated questions over his qualifications by opponents claiming they are false.

5. Examples of Blockchain Applications in education

The following are few examples of how Universities are implementing Blockchain:

- The **University of Nicosia (Cyprus)** is the first higher education institution to issue academic certificates whose authenticity can be verified through the Bitcoin Blockchain.

- **Sony Global Education** has announced development of a new Blockchain for storing academic records.
- As educational institutions cluster and co-operate, the need for shared repositories of certification and achievement become real. An example is the group of universities, **Delft, EPFL, Boston, ANU and UBC**, that recently formed a codeshare-like agreement on certification.

Sharples M., Domingue J. (2016)

- The British university in Dubai's (BUiD) graduated the batch of 2017 as the first in the country and third in the world to receive a digital Blockchain degree – see figure 2 & 3. This was a result of a collaborative project between the University of Nicosia and BUiD's Dubai Centre for Risk and Innovation (DCRI). (http://gulftoday.ae/portal/c71d51c2-787b-4823-82d5-cd9fbed95005.aspx, 2017).

Figure 3 & 4: Examples of online Blockchain verified Certificate – front and rear:

6. Proposed Research Design and Methodology

As the Blockchain technology is still new towards applications related to the higher education sector in the Arab World, this proposed study is based on a qualitative research approach involving methods that include: interviewing learners and relevant stakeholders, engaging in a specialist review and survey of literature and relevant research case studies – see figure 4.The main aim of this research design to provide evidence for the rationale for implementing a new UAE Blockchain service

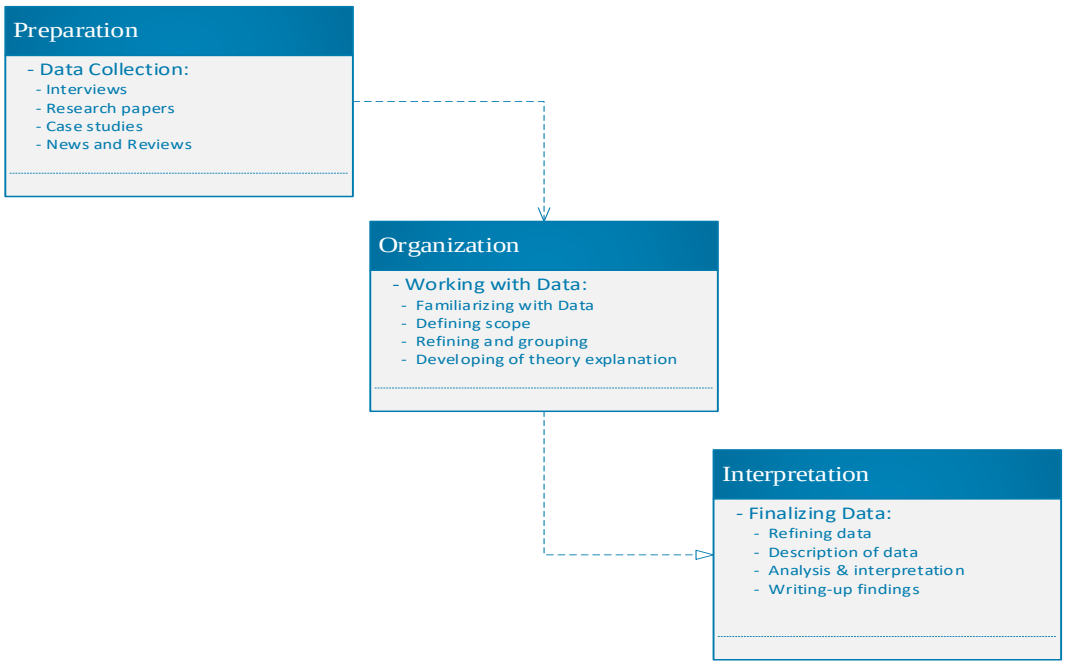

Figure 5 – *The proposed schema for the Research Design*

7. Limitations of the Research

One of the main limitations is the lack of academic applied research literature for this emerging field of Blockchain technology particularly within the Arab World context. However, key global reports and texts have been referred to as well as some key articles including parallel sector developments in banking to develop the research approach.

Furthermore, the fast development nature of such new technology, and the many emerging startups that are providing solutions to the education industry, made us review available academic papers, and follow white papers.

8. Main findings and Conclusion

Blockchain technology will surely disrupt how universities deal with learners' documentations and certification. Moreover, since the awarded certificates will be verified by just visiting the University's website and verifying their authenticity, which will result in reducing administrative involvements in such activities as well as reducing paper-waste from issuing printed certificates.

The latter is exactly what "Dubai Paperless Strategy" is aiming at that by the year 2021, no employee or customer of the Government of Dubai will need to print any paper document. This new strategy also "*falls in line with the vision of H.H. Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, to transform Dubai into a fully-fledged smart city.*" (https://hamdan.ae/en-us/News/Details?nid=2956, 2018).

Moreover, Professor Domingue argued *"even more ambitiously, the real difference that Blockchain technology can make to higher education is to allow us to move beyond the current structure of universities."* (David Matthews, 2017).

A startup we came across is educhain.io , which "*is a leading blockchain startup that enables academic institutions to interface with a blockchain infrastructure of trust. Using blockchain technology, Educhain is building a series of solutions for academic institutions, such as enabling instant issuance and authentication of digital credentials, and a comprehensive "academic passport" of student achievement."* (https://www.pr.com/press-release/739602, 2017), and has collaborated with the Knowledge and Human Development Authority (KHDA) in UAE; in order to develop future ready school communities.

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Smart Learning in the Artificial Intelligence Era

Author:

Souma M. Alhaj Ali

Associate Professor, Director of Center for Excellence and Governance, Hamdan Bin Mohammed Smart University, Email: S.Ali@hbmsu.ac.ae.

Keywords: *Artificial intelligence, Smart Learning, Adaptive Learning, Individualized learning, Artificial Neural Network; Chatbots, Virtual Facilitators, Virtual tutors, learning analytics.*

Artificial intelligence (AI) has the potential to revolutionize how people live and how businesses operate. It is expected that AI will be essential and will be embedded far and wide including government operations, business, industry, and all domains of smart cities including education. This research investigate the applications of AI in smart learning. According to Gwo-Jen Hwang (2014) "Smart Learning Environments" can be regarded as the technology-supported learning environments that make adaptations and provide appropriate support (e.g., guidance, feedback, hints or tools) in the right places and at the right time based on individual learners' needs, which might be determined via analyzing their learning behaviors, performance and the online and real-world contexts in which they are situated. (Gwak, 2010) proposed a concept of smart learning that in two dimensions, first, it is focused on learners and content more than on devices; and second, it is effective, intelligent, tailored learning based on advanced IT infrastructure. Kim et al. (2013) considered that smart learning, which combines the advantages of social learning and ubiquitous leaning, is learner-centric and service-oriented educational paradigm, rather than one just focused on utilizing devices. Middleton (2015) also agreed on the learner-centric aspects of smart learning and on how it benefits from the use of smart technologies. Overall, there is no unified definition of smart learning; however, there has been some kind of agreement among many researchers in the field that it has to incorporate main characteristics as being adaptive, individualized, context-aware, learner-centric, resource-enriched, and technology-driven (Zhu et. Al., 2016). Obviously, adaptability, individualization, and context-awareness cannot be achieved without the utilization of AI. Furthermore, the extensive use of technology in smart learning facilitate the collection of real-time data which could be analyzed via AI to further enhance the learning outcomes and learner's experience according to his/her progress, needs, and preferences.

Chatbots and virtual facilitators are in use in some universities and schools and providing good results. AI enabled personalized tutoring and providing real-time feedback for school and college students. Some universities utilize learning

analytics for understanding, predicting and enhancing learners' performance. From the content side, AI has been applied to allow learners to create their own custom lecture series, to break textbooks into manageable pieces of information, create simple practice tests, and to generate book and chapter specific summaries on the spot.

This research aims to evaluate current applications of AI in higher education and to propose a model for a smart learning system that utilizes AI techniques and in particular Artificial Neural Network.

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