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## **INNOVATION IN KINDERGARTEN (KG) SCHOOLS IN AL AIN: ENABLING AND HINDERING FACTORS AND PROCEDURES FOLLOWED**

Asma Saeed Ahmed Khethail

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جامعة الإمارات العربية المتحدة  
United Arab Emirates University

United Arab Emirates University

College of Education

Department of Foundation of Education

INNOVATION IN KINDERGARTEN (KG) SCHOOLS IN AL AIN:  
ENABLING AND HINDERING FACTORS AND PROCEDURES  
FOLLOWED

Asma Saeed Ahmed Khethail

This thesis is submitted in partial fulfilment of the requirements for the degree of  
Master of Education (Educational Leadership)

Under the Supervision of Dr. Ali Ibrahim

May 2019

### Declaration of Original Work

I, Asma Saeed Ahmed Khethail, the undersigned, a graduate student at the United Arab Emirates University (UAEU), and the author of this thesis entitled “*Innovation in Kindergarten (KG) Schools in Al Ain: Enabling and Hindering Factors and Procedures Followed*”, hereby, solemnly declare that this thesis is my own original research work that has been done and prepared by me under the supervision of Dr. Ali Ibrahim, in the College of Education at UAEU. This work has not previously been presented or published or formed the basis for the award of any academic degree, diploma or a similar title at this or any other university. Any materials borrowed from other sources (whether published or unpublished) and relied upon or included in my thesis have been properly cited and acknowledged in accordance with appropriate academic conventions. I further declare that there is no potential conflict of interest with respect to the research, data collection, authorship, presentation and/or publication of this thesis.

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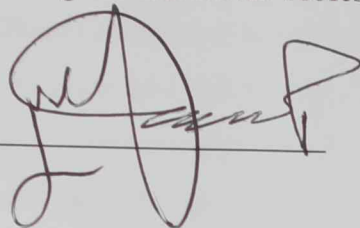
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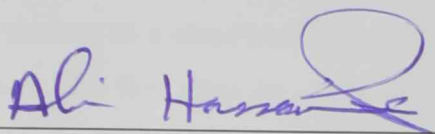


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CHARACTERIZATION AND EVALUATION OF ALUMINA  
NANOPARTICLES DISPERSED ULTRAHIGH MOLECULAR  
WEIGHT POLYETHYLENE AS HARD TISSUE REPLACEMENTS

Omar Gamal Ayad Elsayed Ayad

This thesis is submitted in partial fulfillment of the requirements for the degree of  
Master of Science in Mechanical Engineering

Under the Supervision of Professor Abdel-Hamid Ismail Mourad

April 2019

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## Abstract

This thesis is concerned with innovation in KG schools in Al Ain, specifically the enabling and hindering factors and procedures followed. The government of Abu Dhabi established Abu Dhabi Education Council (ADEC) in 2005 which is now known as the Department of Education and Knowledge (ADEK). ADEK seeks to develop education and educational institutions in the Emirate of Abu Dhabi, implement innovative educational policies and programs which aim to improve education in accordance with the highest international standards by the launching of the New School Model (NMS) which includes a new curriculum, advanced teaching methods, learning materials and resources. These aim to enhance student performance by developing the student as a communicator, a thinker, a problem solver, creative and innovative person. The first purpose of this study is to investigate the factors which facilitate or hinder the implementation of innovation in the Kindergarten (KG) schools in Al Ain. The second purpose of this study is to identify the procedures or steps used in implementing innovation practices in KG schools in Al Ain. A descriptive quantitative research method was conducted by distributing a questionnaire to teachers and administrators in all Al Ain Kindergartens during 2015-2017 (N=686). The researcher conducted interviews in three kindergartens (23 participants) with three principals, six vice principals, five heads of faculties and nine teachers. The conceptual framework for the innovation focus that guided this study was built from a combination of literature related to change processes, innovation factors and innovation process. The framework identified five different approaches which explain factors creating the innovation which are: (a) school leadership factors, (b) school context factors, (c) teachers' factors, (d) parents and students' factors, (e) curriculum, teaching and assessment factors. The main results of the study show that almost all teachers and school leaders indicated that teacher factors, curriculum, teaching and assessment factors, parents and students' factors and school context factors were the main factors that hinder implementing innovation in kindergartens schools in Al Ain, while the main factor that facilitates implementing innovation was school leadership factors. The highest facilitating factor for implementing innovation was "understanding the importance of innovation for our students", which indicates that school leaders and teachers understood why innovation is important for our students.

The most hindering factor for implementing innovation was “students’ innovation inside or outside class should be part of their assessment”, which indicates that school leaders and teachers sometimes believed that students’ innovation inside or outside class should count toward their assessment and if it does not, they do not take it seriously.

**Keywords:** Abu Dhabi Education Council (ADEC), Department of Education and Knowledge (ADEK), new school model, school innovation, innovation factors, innovation stages, UAE education, KG schools.

## Title and Abstract (in Arabic)

### الإبتكار في مدارس رياض الأطفال في مدينة العين: العوامل المساعدة والمعيقة والإجراءات المتبعة

#### الملخص

الهدف من هذه الأطروحة هو دراسة موضوع الابتكار في مدارس رياض الأطفال في العين وتحديدًا العوامل المساعدة والمعيقة والإجراءات المتبعة. أنشأت حكومة أبو ظبي مجلس أبو ظبي للتعليم في عام 2005، والذي يطلق عليه الآن دائرة التعليم والمعرفة، وتسعى الدائرة لتطوير المؤسسات لتعليمية في إمارة أبو ظبي، وتنفيذ سياسات تعليمية مبتكرة، وتطبيق برامج تهدف إلى تحسين التعليم وفق أعلى المعايير الدولية من خلال تناول مهارات الابتكار والابداع في نموذج المدرسة الجديد (NMS) الذي يتضمن منهجًا جديدًا، وأساليب تدريس ومواد تعليمية وموارد كثيرة من أجل تعزيز أداء الطلاب من خلال تطوير الطالب كمتواصل ومفكر ومحلل للمشكلات، ومبدع ومبتكر. لهذه الدراسة هدفان: الأول، دراسة العوامل التي تسهل أو تعيق تنفيذ الابتكار ومشاريع الابتكار في مدارس رياض الأطفال في العين. أما الهدف الثاني فيمكن في تحديد الإجراءات أو الخطوات المستخدمة في تطبيق ممارسات الابتكار في مدارس الروضة في العين. وقد استخدمت الباحثة المنهج الكمي عن طريق توزيع استبانة على المعلمين والإداريين في جميع رياض الأطفال في مدينة العين، حسب نتائجهم في برنامج التفتيش "ارتقاء" العامين الدراسيين بين عام 2016 - 2017 وعددهم 686. وأجرت الباحثة أيضًا مقابلات مع بعض المعلمات والإداريات (عددهم = 23). وقد اتخذت الدراسة إطارًا مفاهيميًا للابتكار للاسترشاد به وبناء أدوات الدراسة طبقًا له بعد مراجعة الأدبيات ذات العلاقة. وتضمن الإطار عملية الابتكار أو مرحلته، والعوامل المساعدة لخلق الابتكار في المدارس والتي قسمت إلى خمس مجموعات: (أ) عوامل القيادة المدرسية، (ب) عوامل السياق المدرسي، (ج) عوامل المعلمين، (د) عوامل أولياء الأمور والطلاب، (هـ) عوامل مناهج التعليم والتدريس والتقييم. وتظهر النتائج الرئيسية للدراسة أن معظم المعلمين وقادة المدارس أشاروا إلى أن عوامل المعلم، والمناهج الدراسية، وعوامل التدريس والتقييم، وعوامل أولياء الأمور والطلاب وعوامل السياق المدرسي كانت العوامل الرئيسية التي تعيق تطبيق الابتكار في مدارس رياض الأطفال في العين. في حين أن العوامل الرئيسية التي تسهل تنفيذ الابتكار هي عوامل القيادة المدرسية. وجاءت أهم العوامل الميسرة لتطبيق الابتكار أولاً فهم أهمية الابتكار لطلابنا، مما يدل على أن قادة المدارس والمعلمين كانوا

دائمًا يفهمون الحاجة إلى تبني الابتكار لطلابنا، بينما كانت أقل العوامل تسهياً أو العوامل المعيقة لتنفيذ الابتكار هي تضمين ما يحدث من ابتكار الطلاب داخل أو خارج الفصل الدراسي في تقييمهم، مما يشير إلى أن قادة المدارس والمعلمين يعتقدون أحياناً أن ابتكار الطلاب داخل الصف الدراسي أو خارجها يجب أن يكون من ضمن تقييم الطالب.

**مفاهيم البحث الرئيسية:** مجلس أبو ظبي للتعليم، دائرة التعليم والمعرفة، النموذج المدرسي الجديد، الابتكار في المدارس، العوامل الميسرة للابتكار، العوامل المعيقة للابتكار، مراحل الابتكار، التعليم في الإمارات، مدارس رياض الأطفال.

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Special thanks go to my family who encourage and support me along the way. In addition, special thanks are extended to my colleague Dalal Al Dosari for her support and encouragement.

## Dedication

*I dedicate this study to:*

*My Father*

*An inspiring leader who taught me to always believe in myself*

*My Mother*

*Who is the most beautiful and caring person on earth and my source of strength*

*My daughter*

*Who is a miracle that never stops reminding me to give thanks and encourage me to  
be successful*

*My sisters and Brothers*

*Who always stand beside me, to find a better way*

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## **List of Abbreviations**

ADEC	Abu Dhabi Education Council
AEDK	Abu Dhabi Department of Education and Knowledge
KG	Kindergarten
PD	Personal Development
R&D	Research & Development
SPSS	Statistical Package for the Social Science
UAE	United Arab Emirates

## Chapter 1: Introduction

### 1.1 Overview

The world is changing rapidly, and countries are obliged to keep up with the change or they will be left behind. Recently, many countries are searching for innovative practices in business, education, medicine, and space. Innovation has become a requirement of the future. The forces of globalization and technological development are becoming stronger every day and they hold that innovation is a key driver for sustainable economic development. Research has proven the significance of innovation for growth and development (Shapiro, Haahr, Bayer, & Boekholt, 2007).

This rapid change also includes education and the systems of schools. It is expected that educational institutions become hubs for innovation. Most of today's change and reform demands that schools cannot ignore the global change and competition among countries. A powerful way to affect educational organizations is to work in a culture of excellence; one which encourages and nurtures innovation. Therefore, nations compete in applying innovative models which focus on creating links between the learning outcomes, the 21st century skills, and labor market needs (Serdyukov, 2017). The ultimate goal is to establish knowledge-based economies which require the education systems to prepare their graduates to become highly skilled for the future. Comparative studies indicate that countries with the capacity to innovate are considered as having overall more advanced levels of education, and there is a common agreement that schooling and learning are important avenues for developing innovation in the young generations (Shapiro, Haahr, Bayer, & Boekholt, 2007).

Definitions of innovation are many. In the Business Dictionary, innovation has been widely defined, but not always fully understood. The definition ranges from being a measure of Research and Development to the number of new patents registered through a transformational approach to manage the enterprise. Theodore Levitt, a professor at Harvard Business School defined creativity as thinking up new things, whereas innovation is doing new things. For example, to innovate we should think about what we are presently doing and develop a new idea to help us do a job in a new way (Serdyukov, 2017). In this sense, innovation may create new or improved customer value, more competitive business models, and contribute to more nimble organization designs. At the organizational level, the output of enterprise level, innovation is ultimately reflected through how much value is created. At the country level, growth in Gross Domestic Product (GDP) beyond that of organic growth is predicated on the aggregated value created by organizations (Dobni, Klassen, & Nelson, 2015). A widely accepted definition states that creativity is the production of novel and useful ideas, and innovation is the successful implementation of creative ideas within an organization (Amabile, 1983, 1998; Amabile, T., Conti, R., Coon, H., Lazenby, J., & Herron, M., 1996). Therefore, creativity is at the individual level, but innovation is at the organizational level (Oldham & Cummings, 1996).

The significance of innovation has been recognized over time by many societies. However, innovation was treated as a natural phenomenon that ‘just happened.’ No prepared plans for innovation, it used to come through Research and Development (R&D). The expectation was that innovation was not something that required direct engagement at CEO or Board level, and that it was not agreeable to being managed (Godin, 2008). Before the 1980s, very little empirical evidence existed as to what companies should expect when they ventured into the new territory of

innovation. This status has led to not having enough knowledge base, theories, models, or constructs to guide us now in how to venture in innovation (McGrath, 2012).

Innovation has led to a change in education through a variety of methods which focus on quality and productivity of learning. Recognizing a possible capacity for learning in students is the core important aspect of the purpose of innovation in education. So far, although innovation in business, engineering, and technology is continuously connected to the final output of the procedure, innovation in education does not essentially improve the final output. For example, students' readiness for workplace and future is not the result of innovation in education. Currently, many innovation initiatives in education do not continuously produce a positive change in the quality of learning and teaching. That is why the recommendation for new leaders in education is to provide an environment that nurtures and supports innovation in schools (Serdyukov, 2017). It is obvious that schools have been resistant to change. Many educators argue that the majority of classrooms look today as they looked a century ago (Bharadwaj & Menon, 2000). Educational systems retain outmoded models of learning that are no longer suitable to students today and which do not prepare them for future challenges (Kimmelman, 2010).

The United Arab Emirates (UAE) has achieved record-breaking rates of growth in almost all fields, which has placed it at the top in terms of global competitiveness, according to reports by specialized regional and international organizations. The UAE is ranked in the top ten countries globally in the Global Competitiveness Report (UAE Ministry of Finance, 2018, the UAE in Global Competitiveness Reports, para. 1). Other reports have ranked the UAE highly on the happiness of citizens as well as sustainable growth in many fields, including the economy, trade, investment and

communications, in addition to information, technology, tourism, infrastructure and human and social development (Helliwell, Layard & Sachs, 2018).

The national status that the country has achieved, coupled with the high expectations of the country leaders, gives tremendous drive to the education system to not only cope with the change but to be a key player in leading change (Bin Taher, Krotov, & Silva, 2015). One of the UAE's highest priorities has always been education as the nation follows the teaching of the founder; His Highness Sheikh Zayed Bin Sultan Al Nahyan, who had constantly stressed on applying the principle of: "The greatest use that can be made of wealth is to invest it in creating generations of educated and trained people" (Embassy of the United Arab Emirates in Washington-Cultural Division, n.d, Education in the United Arab Emirates, para. 1).

Although the UAE has achieved much in the field of education, there is a real awareness that the constant updating of policies and continual investment in infrastructure is required to ensure that graduates are properly equipped to enter the workforce and assist in the country's development. To this end, the Ministry of Education has produced a policy document entitled UAE Vision 2021, outlining a strategy for further educational development in the UAE up to the year 2021, which was articulated in a number of five-year plans. UAE Vision 2021 is based on an effective strategic planning model which focuses on short and long strategic smart goals (Bryson, 2003). It is not a prescriptive vision but one that realizes the importance of continuous improvement consistent with changing conditions both within the educational system and the needs of the society (Al-Khoury, 2012).

According to Low (2012), 60% of the Abu Dhabi economy today depends on oil and gas and 40% on non-oil and gas industries. By 2030, the plan is to reverse this,

and this requires a focus on innovation. The pillars of the Abu Dhabi Economic Vision 2030 include the creation of a sustainable knowledge-based economy by focusing on innovation, research, science and technology. The Abu Dhabi Government's emphasis on innovation and education will not be derailed by the new economic realities stemming from lower oil prices. In fact, the UAE annually allocates AED 14 billion of investment for innovation, and AED 7 billion out of this amount goes to research and development. Spending on this domain is expected to significantly increase in the upcoming years ("UAE Launches Plan," 2014).

## **1.2 Statement of the problem**

In the middle of the growing demand for innovative individuals, a study conducted by Miller and Almon (2009) reported that the number of innovative children worldwide is declining. It is too early to decide why innovation scores in some countries are declining. One possible reason is that kids spend more time in front of the television and playing video games than engaging in innovative activities. Additionally, developing innovation in schools might be left to chance. No serious and dedicated effort is exerted to explore and nurture innovative and talented students in schools and there are no continuous realistic efforts to develop innovation in all children (Wagner & Compton, 2012).

Teaching students how to innovate is a big deal indeed. According to Serdyukov (2017), across grade levels and subject areas, in all kinds of socioeconomic settings, teachers describe similar challenges when they shift to a more active, student-driven, collaborative, project-based approach to teaching and learning. Students who are used to coming up with the correct answer for a test can be confused by open-ended questions that have multiple right answers. Students who have only been graded

individually in the past may balk at a grade that reflects teamwork. If we are serious about preparing students to be innovators, we have some hard work ahead. Getting students ready to tackle tomorrow's challenges means helping them develop a new set of skills and fresh ways of thinking that they will not acquire through textbook-driven instruction. They need opportunities to practice these new skills on right-sized projects, with supports in place to scaffold learning. Boss (2012) stressed the importance of building the skills of solving problems through learning from hindrances, as well as the advantage of students' development of interests when they engage in practices of innovation.

Since the establishment of the Abu Dhabi Education Council (ADEC) in 2005, schools in Abu Dhabi have witnessed many different initiatives of educational reform within a short period of time and one of these current initiatives is in the topic of innovation. The UAE government aims to speed up education-based excellence and innovation by adopting best practices to meet the requirements of development and expectations of leaders (Farah & Ridge, 2009). H.H. Sheikh Mansour, the deputy prime minister of the United Arab Emirates, Minister of Presidential Affairs and member of the ruling family of Abu Dhabi said, "Our objective is for everyone to work in the spirit of innovation. We want to follow this spirit of innovation and the spirit of Sheikh Zayed, who never stopped thinking, innovating, creating and achieving" (Federal Authority for Identity and Citizenship, 2015, *Innovating the Future*, para. 2). Innovation can play an important role to help our education to compete globally and at the same time fulfil the needs of the country.

Two years after the launch of the innovation initiative in our schools, it is important to assess this initiative and explore the factors that hinder its implementation

as well as those that help in having it become a reality. As in any change, the implementation of innovation inevitably caused tensions to school staff and faced some difficulties and challenges. These difficulties may begin with misunderstanding and not accommodating innovation because it is not yet part of the education system. To reach the success of the innovation practices, it must become part of the school norm for all employees and stakeholders, which will take time. Moreover, the long history of the central education system in the UAE will certainly affect the implementation of the model as employees and stakeholders are required to take on challenging new roles. Resistance is expected with any change and different groups and teachers in schools will resist and will try to keep their old practice and norms (Ibrahim, Al Kaabi & El Zaatari, 2013). Therefore, while the innovation approach has happened for some time in Abu Dhabi schools, its implementation might be facing some challenges.

Additionally, innovation practices require a change in the roles of principals, teachers, and parents and will require them to participate more in school reform. However, the long history of a central education system, the lack of the necessary leadership skills, and the low level in desire to participate in decision-making of teachers, might bring some difficulties and challenges of the innovation. Thus, this study attempts to investigate innovation in Kindergarten government schools in Al Ain.

### **1.3 Purpose of the study**

This study attempts to investigate the factors that facilitate or hinder the implementation of innovation in the Kindergarten schools in Al Ain. The second purpose of this study is to identify the procedures or steps used in implementing

innovation practices in KG schools in Al Ain. Based on these two purposes, areas for improvement, if any, will be identified.

#### **1.4 Research questions**

The research questions that this study aimed to answer are:

1. What are the main factors that facilitate or hinder implementing innovation in Kindergarten schools in Al Ain?
2. To what extent do Kindergarten schools in Al Ain follow clear procedure to implement innovation?
3. How can implementation of innovation in KG schools be improved based on the perceptions of school staff?

#### **1.5 Significance of the study**

The findings of this study will enable policy makers in the UAE educational field to understand the factors that enable or hinder the implementation of innovation in KG schools. This will assist them to create policies and procedures to help schools in their effort to implement innovation practices effectively. The study will also aid school leaders and teachers in knowing the steps that they usually miss in implementing innovation. They can adopt these steps to improve implementing innovation in their schools and can provide training and workshops for teachers on these steps. In addition, the study will encourage educators to start implementing innovation practices and ideas throughout the educational community. Finally, the study adds to the knowledge about the current situation of implementing innovation in KG schools which is considered an under-researched topic.

## **1.6 Limitations of the study**

There are several potential limitations to this study. First, there is no clear declaration of using innovation as an approach in the Kindergarten schools, which therefore limited the administrators and teachers' knowledge and experience of implementing innovation in these schools. The sample of the study included only kindergarten schools in Al Ain and therefore the results of the study cannot be generalized to the entire Abu Dhabi emirate or to all schools. Second, at the time of the interview, the teachers in the Al Ain KG's were busy or had an unexpected meeting which affected their participation in the interview. Moreover, the researcher faced some challenges to get Irtiqaa inspection which is program support school leaders and schools by sharing the recommendations included in the inspection report to support schools to develop effective strategic and improvement school plans.(evaluations for the schools in the innovation standard because Irtiqaa inspection department preferred to keep of data for internal use only.

## **1.7 Definition of terms**

The concepts involved in this study are clarified in some detail under the review of literature. The main concept is innovation. Innovation can be generally defined as something out of the ordinary. More specifically, it is a new product, model, or perspective that students and teachers are capable of generating (Serdyukov, 2017). Amabile (1988) stressed that making the context suitable for fostering innovation is important. This includes envisioning the possibilities, creating an applicable plan and implementing practical steps for constant conduct

Abu Dhabi Education Council (ADEC) is the educational authority for the emirate of Abu Dhabi which includes capital city of Abu Dhabi, the city of Al Ain,

and Al Dhafra city in the Western region of the country (previously Al Gharbiya). Since January 2008, ADEC has become the supervising body of the Abu Dhabi Educational Zone (ADEZ), taking over the role from the UAE Ministry of Education. In September 2017, ADEC was changed in ADEK or the Department of Education and Knowledge as the MOE and ADEK came into a united body in the initiative to unite the education system in the UAE and create what is known as the “Emirati School Model”.

## **Chapter 2: Literature Review**

In the twenty-first century, it will be the innovative thinkers who will make the extreme contributions to different societies, create technologies that enrich our lives, find cures for diseases, and find innovative solutions to the world's problems. That's why schools must provide more opportunities for all individual students to create, explore, investigate and innovate. The recognition of a possible capacity for learning in students is the core aspect of the purpose of innovation in education (Bharadwaj & Menon, 2000). The school is the one place in which all children can think outside the box and seek solutions to real-world problems that challenge and interest them. This chapter will include three parts in which innovation will be considered along with different approaches. The literature review highlighted some studies which indicated the importance of these nine elements: a compelling case for innovation, an inspiring, shared vision of the future, a fully aligned strategic innovation agenda, visible senior management involvement, a decision-making model that fosters teamwork in support of passionate champions, a creatively resourced, multi-functional dedicated team, willingness to take risk and see value in absurdity and a well-defined yet flexible execution process.

Part 1: The first part will focus on the definition of innovation, which varies depending on the context. In this part researcher will explain different definitions that give some clarification of the innovation in different fields.

Part 2: The second part will focus on the importance of innovation in schools. In this part, the researcher will explain the need for schools be innovative within the context of the global economy.

Part 3: The third part will focus on understanding educational change. In this part researcher will explain theories behind innovative change and the stages involved.

Part 4: The fourth part will focus on innovation factors. In this section a review of the previous studies is done, and the key previous studies are summarized into five different approaches, which seek to explain factors affecting the creation of innovation, which are school leadership factors, school context factors, teacher factors, parents and students' factors and curriculum, teaching and assessment factors.

Part 5: The fifth section will focus on innovation in the United Arab Emirates, which is the context of this study. Here, the UAE education environment background will be presented in order to make known the significance of this study in a country such as UAE.

## **2.1 Definition of innovation**

The definition of innovation varies from one resource to the other depending on the context. In the Business dictionary, innovation means “The process of translating an idea or invention into a good or service that creates value or for which customers will pay” (Innovation, n.d., para. 1). To be called an innovation, an idea must be replicable at an economical cost and must satisfy a specific need. Innovation involves deliberate application of information, imagination and initiative in deriving greater or different values from resources, and includes all processes by which new ideas are generated and converted into useful products. For example in business, innovation often results when ideas are applied by the company in order to further satisfy the needs and expectations of the customers. In a social context, innovation

helps create new methods for alliance creation, joint venturing, flexible work hours, and creation of buyers' purchasing power" (Serdyukov, 2017).

On the other hand, some researchers use a definition for innovation in different contexts. Small (2014) presented a different definition for innovation. He listed the definition of innovation by Rosabeth Moss Kanter as "innovation as creating a new idea, or improving an existing one, adopting it and implementing it in a process. . He also mentioned Charles W. Prather and Lisa K. Gundry's definition of innovation as a method of problem-solving for the purpose of attaining a performance level that is enhanced. To conclude, Small (2014) stated that: "innovation requires using problem-solving skills and persistence to find viable solutions to that problem" (p. 2). Twenty-first-century jobs need creativity and innovation. However, the school focus is on curricula, standards, and testing, school educators need to offer more opportunities for students to be creative and innovative and to investigate and explore their ideas (Bharadwaj & Menon, 2000).

In an educational study conducted by Pennington (1995) to explore secondary teachers' adoption of innovative practice over a 6-month period, the author stated that innovation elicits information and presents the motive for change, and thus, a teacher's endeavor of putting a new idea into practice.

The concept of innovation is relatively varied, depending principally on its application. Briefly, the researcher believes that innovation is the effective development of new ideas. The researcher defines it under the business concept by saying it is "companies' success, for instance, increased revenues in new ways, access to new markets, increased profit margins by creative ideas, among other benefits." However, in an educational context, the researcher said it could be such as distance

learning, implementing new school models, using innovative classroom teaching or innovative teaching methodologies. Chesler, Schmuck and Lippitt, (1963) suggested that applying new teaching strategies or adapting existed ones can be considered a practice of innovation by the teacher. An example of that is implementing widely-known strategies like role play as a newly-presented method for one classroom.

## **2.2 The importance of innovation**

Innovation is a term being used commonly in political, education and economic discussion. Innovation has been the focus of numerous countrywide reports around worldwide. For example, the report, entitled Innovation America that was issued by the National Governors Association in 2007, President Obama used the term in his January 2011 State of the Union Address expressing that “the first step in winning the future is encouraging American innovation. We need to out-innovate, out-educate, and out-build the rest of the world.” The second decade of the 21st century is now the Innovation Age, having moved together with the Information Age (p. 1).

In the UAE context, Low (2012) referred to Sheikh Sultan’s emphasis on the UAE Government advocacy for education and innovation as a response to the decrease in oil prices. His statements elaborated on the intentions of diversifying away from oil that were envisioned by the decision makers in Abu Dhabi and reflected nowadays in the decreased reliance on oil in the Gross Domestic Product (GDP) in favor of the domains of innovation and education (Low, 2012).

Sawyer (2006) noted that traditionally, the education system was set up to cater for a more industrious economy. However, as the global economy has shifted towards a more to a knowledge-based economy, schools have not adjusted their systems

accordingly. He argues that group creativity is vital for those in education today. Sawyer (2006) saw that within the working economy, innovation is rarely occurs in solitude but is more of a collaborative, team effort, and this group work environment should, therefore, be reflected in schools. It was noted that unstructured group discussion and activities which lead to “deep, creative thinking” should be encouraged. Less teacher direction in the classroom will lead to enquire and build knowledge together and discuss their innovations in the classroom (Sawyer, 2006). He suggested that the curriculum in classroom and schools should be flexible enough to encourage improvisation and that teachers need to move from structured routines to contribute to creative and innovative learning.

It has been noted that schools need for foster creativity and innovation in order to keep up with the ever developing national and global economy (Serdyukov, 2017; Tan & Gopinathan, 2000). The education Ministry in Singapore has developed various strategies to enhance innovation within schools in the country in response to global demands (Tan & Gopinathan, 2000). Also, Lee (2011) noted that skill of innovation is vital to our knowledge-based economies. It will encourage problem solving and critical thinking and creativity which in turn, lead to more innovation, all of which is fostered by innovative teaching. In addition, Ramma, Samy and Gopee (2015) highlighted the importance of innovation in society, where innovators contribute to the wider society and are “responsible and active citizens.” This was also an idea mentioned by Serdykov (2017), who noted that a lack of innovation can have social and economic repercussions and that education creates a sustainable future for the global economy, therefore innovation in the particular area of education is of vast importance.

Westera (2004) explained that many theories have been used to interpret or explain the innovation and the educating by innovation in general. In a paper looking at technology induced innovation, Westera (2004) noted that with the development of information and communication technologies, has come an increased need for educational institutions to be innovative in the way these technologies are incorporated into the learning process. It was noted that pursuing innovation is not an easy process and there is always resistance to new ways of doing things, however as humans, we are constantly striving to improve and move forward with our ideas. It was noted by Westera (2004), that traditionally, educational institutions have not been known for their “innovative power”, but that through new innovative ideas, technology is allowing educational institutions to improve in their “content, method and organization” of education.

Innovative education is thought to include students in a more active way with their educational tasks, which in turn will lead to a more “active experimentation” within the classroom (LeBlanc, Léger, Lang, & Litrette–Pitre, 2015). An innovative education comprises a range of tasks that aim at increasing the engagement of students and influencing them (Hogan, 1996).

Educational organizations internationally are being strengthened by innovative ideas, technologies and new educational systems to continuously improve their services to improve their performance. The purpose of encouraging the innovative ideas and technology in organizations is to reduce time, efforts and costs. Members in an organization need to be aware of the goals of innovation to contribute to a better understanding of their innovation implementation in schools. In education, it was noted by Raven (1990) that traditionally, it was senior management who set goals and

the teachers who carried out the prescribed activities. This did not allow for innovation in the classroom and did not encourage teachers to study their individual pupils and tailor an educational program to suit their needs. However, if school goals are set by the entire team, including teachers, then innovation will be more likely to happen.

### **2.3 Understanding innovation change**

Berman, Mclaughlin, Pincus, Weiler & Williams (1979) examined the change process in a school district in America. It was noted that change should be for the purpose of more meaningful planning, implementation and checking strategies rather than a method of applying. In this paper, the researchers looked at three phases which they highlighted were part of the change process. They explained the phases as; adaptation via deciding the change in phase one, implementation through the endeavor of achieving the change in phase two, and continuing or putting an end to the change applied to the process. Implementation for most changes takes two or more years; only after that we can consider that the change has really a chance to become implemented. The line between implementation and continuation is arbitrary and not clear.

In a book titled “The school leadership triangle: From compliance to innovation” Kimmelman (2010) identified a frame work which could be used to implement a process that will lead to innovative ideas in schools. He said the innovation process includes three stages. The first stage is inspiration, where members of the team look at the challenges faced and highlight an area which needs addressing. The second stage is what Kimmelman (2010) describes as the “ideation phase,” where ideas for a potential solution to the problem are discussed by the team and new ideas are generated to solve the challenge. The last and third stage is implementation, which requires the team to work together to implement their chosen plan to overcome the

problem. It was stated that these phases or stages do not occur in isolation but are constantly being worked through as the team moves through this process and discovers new problems and generates new solutions to those problems. It was also noted that a constant process of evaluation should be in progressive to evaluate results and make decisions accordingly.

Kimmelman (2010) also noted that for innovation to successfully occur within an educational setting, it is of vital importance that an innovation team is set up within the school. The members of this team should be focused on solving problems and to try new and inventive solutions. Collaboration should be at the heart of these teams. Kimmelman (2010) also suggested appointing a specific leader, known as an “innovation coach” to lead these teams. This should be a teacher who has had the opportunity for extra training in leadership and innovation.

Serdyukov (2017) also highlighted similar ideas in his paper looking at innovative ideas in the education field in the USA. He spoke about the “idea” which is often the solution to an existing problem, the “change” by the implementation of the “idea” and lastly, the “outcome” after implementing the change. Serdyukov (2017) highlighted that the aim of this process should always be to “raise productivity and efficiency of learning and/or improve learning quality”.

In terms of teaching professionals, in a study looking at eight Hong Kong secondary teachers' adoption of innovative practice over a 6-month period, Pennington (1995) noted that when adopting new and innovative ideas, teachers will move through a process before embracing the new ideas. Innovation moves from being a “procedure” to having a more interpersonal aspect in their teaching, to finally the conceptual aspect

where teachers add these new innovative practices into their teaching and mold these ideas to the needs of themselves and their students.

## **2.4 Innovation factors**

### **2.4.1 Leadership factors**

Carmeli, Gelbard and Gefen (2010) said that by promoting a more innovative leadership style, the leadership will better meet the needs of staff as well as bridge the gap between an organization and its environment. This is vital in a school context to optimize learning within an ever changing and fluid context. They noted some key traits of innovation leadership, some of which were establishing an atmosphere of positive relationships and mutual trust and supporting the initiatives of the members of the organization. To allow for change and adaptation, there must be first a culture where these things are accepted, and this can be laid down by the management. Carmeli, Gelbard and Gefen (2010) emphasized the importance of the entire management team being on board with an innovative style of leadership, not just the person at the top.

In a school context, Chesler, Schmuck, and Lippitt, (1963), looked at factors which affect innovative teaching and noted that a school principal can have direct or indirect influences in encouraging staff innovation. Instead of talking about actual innovations, Moolenaar, Daly, and Slegers, (2010) speak about a “climate of innovation” where innovative ideas are fostered, risks are taken and continuous improvements are being made, which allows innovation to actually happen. All this can be encouraged and grown by the type and style of the leadership in place. Leaders can provide guidance to staff in order to lead their team towards the school vision and model out this behaviour in front of staff.

Kirkland and Sutch (2009) wrote a document entitled “Overcoming the barriers to educational innovation”. In a review of the literature, they noted that one of the key factors of education influence in schools is leadership. They described the relationship between principal and innovator as operating at a “micro level”, where the principal has a direct influence over the innovator, in this case, the teacher. They noted that innovation and creativity can be directly influenced and supported by the management style the principal adopts, namely one which supports failures in innovation and promotes “an atmosphere conducive to innovation”. They also looked at how technology can be used in an innovative way in the classroom. They noted the direct relationship between management style and innovation. By creating a supportive atmosphere, where innovation is encouraged and failure is accepted, teachers will be more creative in their teaching styles, which should encourage more innovative teaching (Kirkland and Sutch, 2009; Serdyukov, 2017).

Innovation in schools is a “healthy trend” which requires teachers to be willing to experiment and realise that in this innovative process, the desired outcome may not always be achieved (Hogan, 1996). This requires a supporting leadership team who gives the staff freedom to attempt new and innovative ideas without the fear of failure. Kirkland and Sutch (2009) also noted that when leadership grants increased autonomy to teachers, an atmosphere of innovation occurs. They stated that there were some key characteristics of leaders who enabled innovation. These were leaders who were: “comfortable with change, (had) clarity of direction, were thorough, had a participative management style and who had traits of pervasiveness and persistence.”

Kirkland and Sutch (2009) summed up the importance which the school leadership can have on fostering or hindering innovation in schools by stating the following

Making a culture of transformative innovation premised upon creativity is not, obviously, simply about ‘letting go’ and waiting to see what ideas bubble up. Instead, it requires significant hard work, team building and leadership. Indeed, our review and consultation suggested a need for a fresh perspective on leadership, what it means, and how it might operate in schools to promote transformative innovation.

They also noted the motivational aspect which leaders can have upon their workforce. They indicated that one motivating factor for teachers to innovate in the educational setting was to meet the expectations of their leaders. In a wider organizational context, which Kirkland and Sutch (2009) describe as the “messo” level, management must assist “turning innovative ideas into reality” Through effective management strategies, principles can ensure changes happen smoothly and barriers to innovation are minimized. They noted by distributing leadership to others, an atmosphere of innovation is fostered, empowering staff and encouraging innovation. Headteachers must look “outwards” for inspiration to innovate from sources such as conferences, meetings and visits to other schools (Kirkland & Sutch, 2009).

Hsieh, Yen, and Kuan (2014) also noted that a school principal can have a dramatic impact on both students and teachers. Through empowering teachers and sharpening their teaching skills, student learning outcomes could be enhanced. They described the principal as the “encourager” who has the role of providing continuous encouragement for teachers to try innovative teaching practices, enhance skills and

actively contribute to better students' learning and overall school performance. They unearthed these findings through a study which distributed questionnaires to elementary school teachers in Japan to determine the relationship between the principal being a "technology leader", i.e. being the key person who knows how to use technology to improve teaching and students' learning, teaching innovation and student optimism. They found a positive relationship between the principal's technology leadership and academic optimism. The medium through which the principal had an effect on student was through teachers who were able to act in a more innovative way when principals had a higher level of technology leadership. In other words, principals have an effect of teachers who in turn have an effect on students.

In relation to students, Kirkland and Sutch (2009) highlighted "that attitudes to risk-taking are not totally rational and depend on perception. One way to support teachers to participate in the risk-taking behaviors associated with innovations is to connect them in terms of their students' possible benefits." Teachers need to feel they are allowed to think out of the box and innovate. This is not because they are mainly nervous or lack confidence in their ability, but because there is a risk involved and all effective innovators understand this. However, it was noted by Banaji, Cranmer, and Perrotta (2010) that teachers need to be supported at every stage of the innovation process.

#### **2.4.2 School context factors**

School context factors could divide into two parts, first one focus' on management strategy factors and second part focus on school climate factors. With regards to management strategy factors, Kirkland and Sutch (2009) suggested that creativity and innovation in schools works more when it is based on high level of

participation and involvement of staff at all levels of the organization in their improvement plans.

Rogers (1995) suggested that the members of the institution must understand the reason for the need for change to motivate staff to believe and accept it. They must also participate in finding creative solutions to overcome the challenges (Martins & Terblanche, 2003). A suitable management strategy must be in place to allow this to happen.

After surveying 51 principals and 702 teachers in the Netherlands, Moolenaar, Daly and Slegers (2010) found that principals who modeled the transformational style of leadership encourage their teachers to take risks, and implement new ideas in knowledge and practice. They noted that leaders who developed shared goals, supported the social needs of teachers, allowed information to be shared quickly and effectively created an atmosphere which allowed for innovation. Other authors such as Oke, Munshi and Walumbwa (2009) also highlight the role transformational leadership has to play when implementing innovation.

In addition to transformational leadership, Oke, Munshi and Walumbwa (2009) also looked at the role transactional leadership has to play in the innovation process. They noted that this style of leadership, where a leader rewards team members when expectations are met, is suited well to the implementation phase of innovation. However, they concluded that there is no one style of leadership which suits innovation processes and a mixed leadership style approach will allow the flexibility which innovation deserves.

Next is school climate factors. Preston, Goldring, Berends and Cannata (2011) looked at the concept of innovation across both public schools and charter schools in USA. They looked at what practices constitute innovation and if levels of innovation differ between public and charter schools. Principals of these schools filled out questionnaires on a range of topics which included school organization, curriculum foci and professional development among others. Whilst finding that there were few differences between innovations in these 2 types of school, it was noted that innovation is very context dependent and practices can only be deemed innovative when looked at in their locality.

Regardless of the type of school, Carless (1997) noted that by highlighting the benefits of innovation to the overall school environment could possibly be one effective method in gaining teacher support for change through innovation.

Mowery and Rosenberg (2000) further define that innovation must include local structures and dynamics that reflect the context of innovation. For example, the difference between private schools and traditional public schools in the same country is measured with different levels of innovation. Therefore, researchers measure innovation in terms of how to link innovative practice to its international and local context.

Iglesias, Juarros and Apraiz (2012) looked at which factors facilitate innovation in ICT in schools and saw that the school must have the right “climate” to encourage innovation with regards to ICT when teaching. They noted that teachers should feel involved and valued by the school and know that their ideas count when working on innovative projects. Suliman, (2013) found that an innovation climate in

an institution or workplace is positively and significantly related to readiness to innovate.

### **2.4.3 Teacher factors**

Teacher preparation innovation programs are non-degree certification programs for student and graduate students who wish to develop new instructors. Examine the program information, courses, work information and pay. According to Urbancova (2013), a teacher preparation innovation program is proposed to design both student and graduate students to change innovation instructors. Every teacher of KG schools needs to focus on the learning ability of the student, which influence future scope and development for both learner and teacher. In another sense, regarding agile career development, the teachers need to spread the light of innovation knowledge to each corner of the KG schools. Moreover, the guardians of the students are also required to check the homework as well as classwork which notify them about the innovation progress of their children. Consequently, both the teachers and parents will be able to track the daily innovation activities of the students. Teacher preparation programs must have all these innovation activities to make a better life of students. Moreover, these preparation innovation programs can offer students specific coursework in the survey level and subjects the teachers are involved with instructing. Besides that, the teacher innovation preparation program also consolidates a hands-on understudy demonstrating learning, which is required in many states. Additionally, typical coursework covers adolescent of child development, assessment of students, literacy and language, educational psychology, innovation issues in education as well as early childhood methods.

Teacher professional development has been seen as a key to encouraging and enabling teachers to implement innovation in the classroom. Girvan, Conneely and Tangney (2016) looked at a “three phase approach to teacher professional development for the introduction and adoption of innovative pedagogical practices, which is theoretically underpinned by experiential learning”. They highlighted that teachers need “real” experiences to allow innovation to flow and need to be specifically addressed in a professional development programme. With regard to developing teachers, Leal-Rodríguez and Albort-Morant (2018) said that “by implementing professional development in schools that is experiential in nature, teachers can integrate innovative instruction”.

In a study by Carless (1997) entitled “Managing systemic curriculum change: A critical analysis of Hong Kong's target-oriented curriculum initiative”, it was said that “Without sufficient retraining, even teachers initially enthusiastic about an innovation can become frustrated by problems in implementation and eventually turn against the project. Training therefore needs to be ongoing and developmental and linked with professional development”. One of training may be of little or no benefit to teachers (Carless 1997; Hamel, Turcotte and Laferrière 2013).

Moolenaar, Daly, and Slegers, (2010) highlighted the importance of teacher training and they added that by increasing teachers’ knowledge and skills, broadening their perspectives and modeling the implementation of new classroom ideas, teachers can grow in confidence in the implementation of innovative practices.

Turcsányi-Szabó (2012) looked at the use of technology in the teaching and learning process. They noted that the education system needs to be continually innovative and evolving in order to meet the current demands of the next generation

to prepare them for the world of work. They noted that teachers need to be equipped to develop skills such as thinking and working in students by sustainable innovative practices and the use of technology in the classroom. Turcsányi-Szabó (2012) suggested that teacher training needs to be enriched with modern tools, especially in the area of information and communication technologies in order to make innovation sustainable for teachers. Also related to technology, Iglesias, Juarros and Apraiz (2012) noted that teachers must have the correct attitude towards the innovative idea in this context, the use of ICT in the classroom. They must feel equipped with the skills to take on new innovative ideas.

Carroll, Chandrashekhar, Huang, Kim and Liu (2015) noted that in post-secondary education in Canada, there is an increased drive to advance education to meet the skill demands of a fast moving economy. They argue that the common concept is that for innovative practices to be within educational settings, change and innovation must be driven from the top down. However, they note the contrary to this popular belief, if the student initiates innovation themselves, this would be innovation in its "truest form." They suggested that the lack of new innovative teaching styles was hindering the progress of students. This therefore places teachers, in all levels of education at the cutting edge of innovation and places much of the responsibility for innovation within the classroom on them. Despite this study by Carroll, et al. (2015) being in post-secondary education, many of the themes could be extrapolated into the Kindergarten setting.

Lee (2011) looked at the impact of teaching innovation on learning effectiveness in Taiwan. He noted that students will be more positive about learning when teaching methods are lively, diverse and stimulating. He suggested that teachers

must use the skills of reflection on teaching styles, questioning current teaching methods and reconstructing new ideas to be truly innovative (Lee, 2011). In their conclusion, they found that teaching innovation has a significant positive effect on learning satisfaction.

#### **2.4.4 Student preparation factors and parent factors**

In a study looking at innovation in specialized secondary schools, Roberts (2011) explored the question “how can students be prepared to be innovators?” and suggested that the following skills, when applied through experiential learning experiences, will foster innovation:

- “(1) A strong background in math, science, and technology.
- (2) An integrative approach to processing content, involving background in the arts and humanities.
- (3) Investigative, analytical thinking that leads to innovation ways of seeing problems and addressing issues.
- (4) The ability to work collaboratively while solving problems and managing research.
- (5) The ability to proceed in spite of to learn from failure.”

Roberts (2011) noted that in order for the above principles to lead to innovative students, the ideas cannot be implemented in isolation, but should be fostered as a “way of thinking”, as teachers and pupils develop ideas through integrated lessons, in order to lead to innovation.

In a Canadian school, which was seeking to use innovative practices in the school environment, it was noted that experiential learning was key to allowing students to move from being “passive” in the learning process, to become active learners through experience (LeBlanc, Léger, Lang & Litrette-Pitre, 2015). The authors concluded that “Students who attend a school focused on experiential learning will not only be more actively involved in various educational tasks, but they will also engage in reflective observation conceptualization and active experimentation.” Therefore, student preparedness is key to fully integrating innovation in the classroom. Hogan (1996) added that both students and teachers must take “risks” and place themselves in new and unfamiliar learning situations through this method of innovative teaching. This style teaching is fun, stimulating and satisfying for both teacher and student (Simha & Teodorescu, 2017). Lee (2011) suggested that innovative teachers can develop analytical students, stimulate their motivation for learning and recognize student learning potential.

One study by Small (2014) highlighted that school libraries can be places which encourage and prepare students for innovation by being a place for meeting students’ needs to put their higher thinking skills into practice as they seek answers for their enquiries and put their ideas into study. Small (2014) suggested that the role of the school librarian can have an impact on innovation in schools by fostering curiosity, imagination and problem solving.

In relation to parents, as well as Urbancova (2013) noting that through parental checks on homework, the guardians can see innovation in progress, Serdyukov (2017) noted that if society, which includes parents, supports innovation, this will lead to a much-improved educational process.

#### **2.4.5 Curriculum factors**

Laferrière, Law, and Montané (2012) looked at a new concept in the classroom, called “knowledge building.” It was seen as an alternative to traditional learning and was aided by technology and encouraged collaboration between teachers internationally. They focused upon the strategies which encouraged this new innovative approach within the school environment. They highlighted that when new “initiatives” or ideas are suggested, they often have to go through a lengthy process before they are actually implemented in school curricula. They found that in order to change, using technology to bring about collaboration was key and that teachers must be supported by principals and administration in order for the new innovative idea to “would take hold, evolve, and sustain” within the school curriculum. This study agrees with Banathy’s (1991) dimensions for systemic educational design to recognize the main features of the sociotechnical design that sustain and nurture the innovations.

The history of innovation in education has noted that whilst innovation and being open to innovation within the curriculum has its benefits, Hanley and Torrance (2011) showed that over the years teachers have voiced their concerns about the difficulties faced when they try to implement changes in the curriculum. They note that within mathematics education in the UK, there has been a vast number of curriculum changes, often more than a teacher can cope with and internalize. In this study, Hanley and Torrance (2011) looked at 16 teachers from 6 schools and how they used a new tool, which would be seen as innovative, in mathematics education. They concluded that the process of making changes to a curriculum is multifaceted and ever changing which requires teachers to adapt curriculums to the needs before them rather than striving for the “ideal” curriculum to which all teachers must adjust (Hanley &

Torrance, 2011). Pennington (1995) noted that when innovative practices are introduced to schools, teachers can take a period of time before they implement new and innovative methods in the classroom through curriculum changes. Through a reflective process, new changes can be made by continually trying new things, reflecting and improving practice and therefore improving the curriculum. The process of continual adjustment can be initially difficult for teachers, but as practitioners change and develop, they become more confident with innovation in the classroom, which will lead to a more tailored curriculum. In addition to this, allowing professionals time to implement new innovative ideas is vital, especially within the current constraint of the curriculum (Hamel, Turcotte & Laferrière, 2013). Serdyukov (2017) also noted that innovation is not easy to adopt in schools as it pushes people out of their comfort zone. Time is needed to allow these innovative changes to spread throughout the school.

Banaji, Cranmer, and Perrotta (2010) conducted over 80 interviews in 27 European countries and found that school curricula need to be more flexible to allow time and space for innovation and that current methods of school assessment do not allow for creativity and are based on the recollection of facts and figures. This is one reason Small (2014) advocated for the increased role of librarians in preparing students for innovation as they are free from the pressures and standards required by tests and classroom requirements

Kirkland and Sutch (2009) indicate that if educators are to prepare students for the innovation economy, they will need an innovation mindset which needs to drive lifelong learning. We must adopt an environment where students learn at their own pace in encouraging surroundings that promotes a deep conceptual understanding of

subject matter in creative way. Or, as LeBlanc, Léger, Lang, and Litrette-Pitre (2015) noted: “Students who attend a school focused on experiential learning will not only be more actively involved in various educational tasks, but they will also engage in reflective observation conceptualization and active experimentation.” (p. 9). These experiential innovative learning experiences must be at the core of a school’s curriculum.

When students progress to a deep understanding of concepts, they can apply and transfer that learning to new situations and experiences, which is success yet again and this critical thinking and adaptability creates different learning opportunities that develop mental agility in students, which encourages educators to be innovators rather than compliance monitors.

## **2.5 Innovation in the UAE**

Ahmed and Alfaki (2013) in their study titled “Transforming the United Arab Emirates into a knowledge-based economy: The role of science, technology and innovation” noted that the UAE has seen continued economic growth in past years which has resulted in the government seeking to invest in areas such as innovation. They primarily looked at the concept of technological readiness in the UAE, due to the noted slowing down in the use of technology to improve productivity. They linked the use of innovative ideas in the areas of knowledge and technology to aid and sustain economic growth in the country. They highlighted the importance of a good education in order to have the skills to innovate and bring about new products via investing in knowledge to bring about “indigenous innovation.” (p. 9).

## **Chapter 3: Methods**

### **3.1 Introduction**

This study attempts to investigate the factors that facilitate or hinder the implementation of innovation in the Kindergarten schools in Al Ain. The second purpose of this study is to identify the procedures or steps used in implementing innovation practices in KG schools in Al Ain. Based on these two purposes, areas for improvement, if any, will be identified.

This chapter presents the research methodology utilized to investigate the innovation practices in Al Ain kindergartens. Therefore, it will describe the research method, population, sampling technique, data collecting instruments, data collecting procedures and data analysis.

### **3.2 Research design**

This study was guided by three research questions: (1) What are the main factors that facilitate or hinder implementing innovation in Kindergarten schools in Al Ain? (2) To what extent do Kindergarten schools in Al Ain follow clear procedure to implement innovation? and (3) How can implementation of innovation in KG schools be improved based on the perceptions of school staff?

Research questions of this study were intended to provide description and exploration of the results. This study uses a mixed research design (qualitative and quantitative methods). The quantitative method was used to obtain the opinions of a large sample of teachers. This method uses numbers and statistics and numerical data (means, standard deviation, and frequencies), to determine the extent to which innovation was practiced in Al Ain kindergartens and the hindering and enabling

factors regarding the school staff and teachers' perceptions. The qualitative method was used to help in explaining numerical results through the interview data. This approach explores the research setting in order to understand the way things happen, why they are that way, and how the participants in the context perceive them.

In addition, the researcher also used the qualitative data to describe the hindering and enabling factors in implementing innovation practices and to arrive at the areas of improvement to implementing the innovation in Al Ain kindergartens.

### **3.3 Population of the study**

The targeted population of this study included all school staff and teachers in Al Ain kindergartens that implemented the innovation practices. All kindergartens are required to implement innovation according to the ADEK teacher and administrator evaluation framework and ADEK inspection. Kindergartens in common schools were also included in the population because school leadership is responsible for Kindergarten, Cycle 1, Cycle 2 and Cycle 3 at the same time and common school teachers and staff had the chance to implement innovation practices. According to ADEK research department, the total number of kindergartens teachers and staff in the targeted kindergartens in Al Ain is 1166. The number of kindergarten school teachers and staff is 686 and the number of kindergartens in common cycle teachers and staff is 480. This total number worked in 36 kindergartens in Al Ain, 20 of them were kindergarten schools while the other 16 were kindergartens in common cycle schools. One kindergarten was excluded because it was newly opened. Table 1 shows a population number of kindergarten teachers and staff in Al Ain.

Table 1: Population number of school teachers and staff in Kindergartens in Al Ain

<b>School Cycle</b>	<b>Number of Schools</b>	<b>Number of School Teachers &amp; Staff</b>	<b>%</b>
Kindergarten	20	686	56
Kindergarten (Common School)	16	480	44
Total	36	1166	100

### 3.4 Sample of the study

The sample included all kindergartens in Al Ain excluding kindergartens in common schools. The questionnaire was distributed in 20 of the 36 kindergartens. The number of teachers and staff at these kindergartens was 686. The number of principals was 23 (3.6 % of the study population), vice principals N = 25 (3.6 %), head of faculty N = 40 (5.8 %), and teachers N = 598 (87.2 %). At kindergartens, the questionnaire was distributed by the researcher in professional development (PD) sessions for all participants.

The interviews were conducted in three kindergartens with a total of 23 participants (three principals, six vice principals, five heads of faculty, and nine teachers). For selecting participants for the interview, a convenient sampling was adopted by which participants who were willing to sit for the interview were selected.

Table 2: Sample of the study

	<b>Number of Kindergarten Teachers &amp; Staff</b>	<b>%</b>
<b><u>Degree</u></b>		
Diploma	50	7.4
Bachelor	567	82.6
Master	48	7
PhD	21	3
<b><u>Position</u></b>		
Principal	23	3.4
Vice Principal	25	3.6
Head of faculty	40	5.8
Teacher	598	87.2
<b><u>Years of experience in education</u></b>		
0-5	19	2.8
6-10	329	48
11-15	309	45
15+	29	4.2
Total number of teachers	686	100

### **3.5 The instruments**

#### **3.5.1 The questionnaire**

Both qualitative and quantitative methods were used to explore the topic of innovation in this study. For the quantitative method, the researcher used the innovation practices in KG schools in Al Ain questionnaire (Appendix D) which was the data collection instrument used to survey the perceptions of school teachers and staff about innovation. The content of the questionnaire was based on innovation factors and innovation processes, which were developed from the literature review, and the ADEK inspection framework.

By reviewing the related literature, the researcher came up with the most important factors that affect innovation practices. Based on earlier studies, five important factors contribute to the high rate innovation success (Govindarajan & Ramamurti, 2011).

The questionnaire was divided into two parts. The first part asked the respondents to indicate their position, degree and numbers of years of experience in education. The second part of the instrument examined (a) the five categories of factors related to innovation and (b) the actions or steps teachers take when working on any innovative project/idea at the school. The questionnaire was built based on five main innovation factors important in creating the innovation which are: (1) school leadership factors, (2) school context factors, (3) teacher factors, (4) parents and students factors, and (5) curriculum, teaching and assessment factors (See Appendix D). The researcher conducted an online questionnaire for remote kindergartens which were located outside Al Ain, which was done through email. The questionnaires were conducted as hard copies for kindergartens located inside Al Ain by the researcher.

For each question, responses in part 2 of the questionnaire required a choice of 0, 1, 2, 3 or 4 to identify the degree teachers evaluate their school's innovation practices. These choices mean; Never, Rarely, Occasionally, Sometimes and Always respectively. For example, the following item evaluates school innovation practices using the innovation factors:

At this school, we clearly understand what is meant by innovation.

0 = Never    1 = Rarely    2 = Occasionally    3 = Sometimes    4 = Always

The school brainstorms ideas of innovation.

0 = Never    1 = Rarely    2 = Occasionally    3 = Sometimes    4 = Always

The questionnaire and interview questions were first written in English and then translated into Arabic and revised by an Arabic language specialist for teachers and staff whose first language is Arabic.

### **3.5.2 The interview**

For the qualitative method, the researcher used interviews which were built to collect data from leaders and teachers in three kindergartens. One of these kindergartens achieved a “very good” level in ADEK inspection, one achieved “acceptable” and the last one achieved a “weak” level regarding school implementation of innovation.

The reason for selecting three different schools with their ranking on innovation was to provide broad perspectives of the factors that might facilitate or hinder the implementation of innovation and to see if schools differed in the steps they used.

The qualitative method of the study gathered the data using personal interviews with participants in order to explore their experiences. The researcher conducted twenty-three interviews in three kindergartens and from each kindergarten the made sure to include the principal, one or two vice principals, head of faculty for English department and for Arabic department, Arabic subject teachers and English subject teachers. These methods were used to investigate the main challenges schools face in implementing innovation, enabling and hindering factors of implementation, and what can be done to improve the process in the future

### **3.6 Validity**

In order to make the instrument valid, the researcher followed these procedures. First, by reviewing the related literature, the factors that might facilitate or hinder innovation in schools were identified. These were used to create the first draft of the survey. Second, the instrument was reviewed by four professors with research experience related to this topic of study. They reviewed the relevance of the instrument statements to the study questions and purpose. Then, the questionnaire was completed by one vice principal and three teachers in one Al Ain kindergarten to check the language and ideas. Third, the instrument was revised by the researcher and the advisor based on the feedback, suggestions and adjustment for improving the questionnaire. To increase accuracy of the latest version of the survey, it was verified by an English language specialist. The researcher made the essential changes in both versions of the Arabic and English questionnaires and the final draft was approved by the advisor.

### **3.7 Reliability**

As a first stage, to ensure reliability of the questionnaire, a pilot study was conducted on 29 teachers and staff in one kindergarten in Al Ain (in one of the common schools). This group was not part of the study sample. The reliability was verified using Cronbach's alpha, which was calculated for each section separately. Table 3 shows the results.

Table 3: Cronbach Alpha coefficient for pilot study and real sample

	Cronbach's Alpha	
	Pilot Sample	Real Sample
Section 1: School innovation practices	.943	.974
Section 2: Procedures or steps of innovation	.854	.961
All items	.883	.861

The above table shows that all coefficients for results were above 0.7 for both sections, which indicates that a high reliability and consistency in all questionnaire sections items. Moreover, the coefficient for results for all questionnaire items was above 0.7 also, which means that the questionnaire can be used for data collection.

### 3.8 Data collection procedures

The first step in collecting data for this study was obtaining formal letter from the Dean of the College of Education at the UAEU which was sent to ADEK online. The application was to request permission for the researcher to conduct the study in public schools (Appendix A). Then, the researcher gained permission to collect data from the public kindergarten schools by receiving the approval letter from ADEK (Appendix B). Third, the researcher asked for a list of Al Ain Kindergartens from ADEK human resources department. Since there was limited available data in ADEK about all schools that got level A in innovation in Irtiqaa inspection, the researcher asked the school principals about the level they got in indicator five in Irtiqaa innovation standard. Based on this data, the researcher found out schools' levels. Based on the scheduled times with administrations and teachers of the kindergartens, the researcher collected data during professional development session in each school. The researcher had an envelope for each kindergarten with enough numbers of

questionnaires in Arabic versions and English versions. The ADEK approval letter was attached to all envelopes. The researcher monitored the distribution and collection of the questionnaire at each school during the professional development sessions.

After the researcher finished data collection from the administrators and teachers, the researcher conducted interviews with the principals, vice principals, heads of faculty and teachers at three kindergarten schools which were identified previously. The first stage was to contact kindergarten schools by the email and ask for an appointment with them. Based on the scheduled appointment, the researcher visited the principals, vice principals, heads of faculty and teachers to interview them face to face. The researcher asked questions that were prepared previously. All the interviews were conducted in the kindergartens and lasted about fifteen minutes for each participant.

### **3.9 Data analysis procedures**

For analyzing quantitative data, the data was coded and entered in a Statistical Package for the Social Sciences (SPSS) for analysis. The SPSS program was used to measure the descriptive statistics such as means, median, mode, percentage, and standard deviation. For section one and two, frequencies and percentages were calculated to identify the degree of evaluating the innovative process using specific factors and the innovation process followed. For qualitative data analysis, all recorded interviews were transcribed into text in a word file. All data texts were read and coded. Then, a table was created, and the most important quotations were clustered under themes or categories. These became the results of the qualitative study.

### **3.10 Ethical consideration**

The researcher conducted the study using ethical standards of research. Participation was voluntary, and names of participants were not requested. Moreover, the questionnaire did not indicate the school name. Participants were free to agree or refuse to participate in the study. The researcher provided participants with contact information in case of inquiries related to the questionnaire.

### **3.11 Limitation and delimitation**

This study was limited to kindergartens in Al Ain; therefore, findings cannot be generalized to all schools in different UAE emirates. Moreover, the results cannot be generalized to private schools. The questionnaire completion might have been affected by limited time, personal judgement or job satisfaction level during the time of data collection.

## Chapter 4: Results

This study aims to investigate the degree to which innovation has been practiced in the Kindergarten schools in Al Ain. The second purpose of this study is to identify the main areas of innovation practices that need improvement. In chapter three, the researcher will explain the results that were based on the quantitative and qualitative data analysis. The research questions that led to the results in this chapter are:

1. What are the main factors that facilitate or hinder implementing innovation in KG schools in Al Ain?
2. To what extent do KG schools in Al Ain follow clear procedures to implement innovation?
3. How can implementation of innovation in KG schools be improved based on the perceptions of school staff?

The five-point scale was used to assess the means. A score from 0 – 0.8 means almost never, 0.81 – 1.60 rarely, 1.61– 2.4 occasionally, 2.41 – 3.2 sometimes, and 3.21- 4 almost always. A score from 0 - 2.4 reflected hindering scores, while a score of 2.41- 4 showed enabling scores.

### 4.1 Results of question one

The main enabling and hindering factors for implementing innovation in KG schools in Al Ain are:

**School leadership factors:** Two factors related to school leadership were used to investigate the understanding of leaders and what they need to do to innovate and

whether they have visible involvement in innovation projects. The results are reported in Table 4.

Table 4: School leadership factors

	<b>Median</b>	<b>Mode</b>	<b>Mean</b>	<b>Std. Deviation</b>
Q5: Leaders at my school demonstrate clear understanding of what teachers need to do to innovate.	3.00	4	3.05	.961
Q6: We have visible school leadership involvement in innovative projects.	3.00	3	3.00	.974
Valid N (listwise)				

In general, school leadership factors conducted means ranged between 3.00 to 3.05 which indicate that the two school leadership factors can be considered as enabling factors. The item with the highest mean is “leaders at school demonstrate clear understanding of what teachers need to do to innovate” with a mean of 3.05 and with standard deviation of .961. This mean score indicates that the leaders sometimes demonstrate clear understanding of what teachers need to do to innovative. The other mean is “visible school leadership involvement in innovative projects” with a mean of 3.00 and standard deviation of .974 and it indicates that they sometimes have visible school leadership involvement in innovative projects, which indicates that this is the slightly less effective factor than the other factor, in this particular domain. It is noticeable that the mode of demonstrating leadership clear understanding of what teachers need to do to innovate is 4 which is higher than the visible school leadership involvement factor mode which was 3 and this result is significant because it indicates that leadership understand the needs of teachers to innovate, however, they are not visibly involved in innovation.

**School context factors:** Seven factors related to school context were used to investigate the understanding of the meaning of innovation, which were: the importance of innovation, inspiring vision, innovation agenda which aligned school vision, school autonomy, enough resources and whether they have visible innovation team work to everyone in the school. The results are reported in Table 5.

Table 5: School context factors

	<b>Median</b>	<b>Mode</b>	<b>Mean</b>	<b>Std. Deviation</b>
Q1: At this school, we clearly understand what is meant by innovation.	3.00	3	2.54	1.401
Q2: We understand why innovation is important for our students.	3.00	4	3.27	.758
Q3: Our school has an inspiring, shared vision for innovation.	3.00	4	2.84	1.140
Q4: We have an innovation agenda aligned with the school vision.	3.00	3	2.43	1.459
Q7: Our school is autonomous (or is not afraid to take risks) in making decisions in support of innovation.	3.00	4	2.47	1.478
Q8: We have enough resources to do innovation at this school.	2.00	3	2.06	1.368
Q9: The work of the innovation team(s) is visible to everyone in the school.	3.00	3	2.21	1.445
Valid N (listwise)				

Table 5 illustrates the mean and standard deviation of the school context factors that kindergartens face in implementing innovation. The item with the highest mean is “understanding why innovation is important for our students” with a mean of ( $M = 3.27$ ) and standard deviation with ( $SD = 0.758$ ) and it is an important enabling school context factor, compared to other school context factors. This means that teachers and

administrators always understand why innovation is important for students. This is followed by “our school has an inspiring, inspiring, shared vision for innovation”, “we clearly understand what is meant by innovation”, “school is autonomous in making decisions in support innovation” and “we have an innovation agenda aligned with the school vision” with means of 2.84, 2.54, 2.47 and 2.43 respectively and standard deviations of 1.140, 1.401, 1.478 and 1.459 respectively. This means that teachers and administrators sometimes have a knowledge of innovation and they have an innovation agenda aligned with the school vision. The lowest means of these items are “we have enough resources to do innovation at this school” and “the work of the innovation team(s) is visible to everyone in the school” with means of 2.06 and 2.21 respectively with standard deviations of 1.368 and 1.445 respectively in this domain. This indicates that kindergartens occasionally have enough resources to do innovation and occasionally the work of the innovation team(s) is visible to everyone in the school.

Teacher factors: Four factors related to teachers were used to investigate the need for training to conduct innovation work in classrooms, having equality to present innovation ideas, having time to plan for innovation and whether teachers encourage students to work on innovative ideas inside and outside classrooms. The results are reported in Table 6.

Table 6: Teacher factors

	<b>Median</b>	<b>Mode</b>	<b>Mean</b>	<b>Std. Deviation</b>
Q12: I need training to conduct innovation work/projects in my classroom.	3.00	3	2.25	1.396
Q15: Every teacher has an equal chance to present their innovation ideas at school meetings.	3.00	4	2.38	1.425
Q17: Teachers have time to plan for innovation with colleagues.	2.00	3	2.14	1.409
Q18: Teachers encourage students to work on innovation ideas inside and outside the classrooms.	3.00	3	2.90	.867
Valid N (listwise)				

Table 6 shows the means and standard deviations of the participants' perceptions of the enabling or hindering teacher factors which kindergartens face in implementing innovation. The results show that all items in this domain range between  $M = 2.14$  and  $M = 2.90$ . "Teachers encourage students to work on innovation ideas inside and outside the classrooms" is the highest mean of  $M = 2.90$  and with a standard deviation of .867, which means that teachers sometimes encourage students to work on innovation ideas inside and outside the classrooms. However, items about teachers "having time to plan for innovation with colleagues" and "needing training to conduct innovation work/projects in classrooms" have the lowest means of 2.14 and 2.25 respectively with standard deviations of 1.409 and 1.396 respectively but they are still seen as important enabling teacher factors in implementing innovation. But again, they do not always exist in schools.

Parents and students' factors: Three factors related to parents and students were used to investigate the parental and community engagement in innovation projects, the

student engagement in innovation projects, and whether they come up with innovation ideas. The results are reported in Table 7.

Table 7: Parents and students' factors

	<b>Median</b>	<b>Mode</b>	<b>Mean</b>	<b>Std. Deviation</b>
Q10: Parents and community members engage in our innovation events/projects.	3.00	3	2.61	.965
Q13: Students engage in innovation work/projects inside the classroom.	3.00	3	2.90	.873
Q14: Students at this school come up with innovation ideas.	2.00	3	2.00	1.3213
Valid N (listwise)				

Table 7 shows the means and standard deviations of the participants' perceptions of the enabling and hindering parental and students' factors. The item with the highest mean is that "Students engage in innovation work/projects inside the classroom" and "Parents and community members engage in our innovation events/projects" with a mean of 2.90 and 2.61 respectively with standard deviations of .873 and .965 which indicate that students sometimes engage in innovation work/projects inside the classroom and parents and community members sometimes engage in innovation events/projects. This is followed by "parents and community members engage in our innovation events/projects" with mean of 2.61 and with a standard deviation of .965 which indicates that parents and community members sometimes engage in innovation events/projects. The lowest mean in this domain is "students at school come up with innovation ideas" with a mean of 2.00 and with a standard deviation of 1.321, which indicates that this is the lowest ranked factor in this domain and highlights that students occasionally come up with innovation ideas.

Factors related to curriculum, teaching and assessment: Four factors related to curriculum, teaching and assessment were used to investigate this factor. These were: the opportunities the curriculum offers to motivate and inspire all students to innovate, the teaching pace is flexible enough to give teachers the time to implement innovation plans inside the classrooms, whether their innovation inside or outside class counts toward their assessment, and if teachers use innovative teaching methods in kindergartens. The results are reported in Table 8.

Table 8: Curriculum, teaching and assessment factors

	<b>Median</b>	<b>Mode</b>	<b>Mean</b>	<b>Std. Deviation</b>
Q11: The curriculum offers an excellent range of opportunities designed to motivate and inspire all students to innovate.	3.00	3	2.24	1.385
Q16: The teaching pace is flexible enough to give teachers the time to implement innovation plans inside the classrooms.	3.00	3	2.19	1.395
Q19: Students' innovation inside or outside class counts toward their assessment	3.00	3	2.86	1.017
Q20: At this school, teachers use innovative teaching methods.	3.00	3	2.62	1.029
Valid N (listwise)				

Table 8 shows the means and standard deviations for the factors enabling or hindering curriculum, teaching and assessment factors. The items with the highest means are "Students' innovation inside or outside class counts toward their assessment" and "teachers use innovative teaching methods" with a means of 2.86 and 2.62 respectively and standard deviations of 1.017 and 1.029 respectively which indicate that students' innovation inside or outside class sometimes counts toward their assessment and teachers sometimes use innovative teaching methods. This is followed

by the “curriculum offers an excellent range of opportunities designed to motivate and inspire all students to innovate” with a mean of 2.24 and a standard deviation of 1.385 which indicates that the curriculum occasionally offers an excellent range of opportunities designed to motivate and inspire all students to innovate. However, the lowest mean in this domain is “The teaching pace is flexible enough to give teachers the time to implement innovation plans inside the classrooms” with a mean of 2.19 and standard deviation 1.395, which indicates that this is the lowest ranked item by participants in this particular domain because the teaching pace is occasionally flexible enough to give teachers the time to implement innovation plans inside the classrooms.

Enabling and hindering innovation factors: Results of participants’ answers of their perceptions for enabling and hindering innovation factors are reported in Table 9.

Table 9: Factors Kindergarten's face in implementing innovation

	<b>Median</b>	<b>Mode</b>	<b>Mean</b>	<b>Std. Deviation</b>
Q2: We understand why innovation is important for our students.	3.00	4	3.27	.758
Q5: Leaders at my school demonstrate clear understanding of what teachers need to do to innovate.	3.00	4	3.05	.961
Q6: We have visible school leadership involvement in innovative projects.	3.00	3	3.00	.974
Q18: Teachers encourage students to work on innovation ideas inside and outside the classrooms.	3.00	3	2.90	.867
Q13: Students engage in innovation work/projects inside the classroom.	3.00	3	2.90	.873
Q19: Students' innovation inside or outside class counts toward their assessment	3.00	3	2.86	1.017
Q3: Our school has an inspiring, shared vision for innovation.	3.00	4	2.84	1.140
Q20: At this school, teachers use innovative teaching methods.	3.00	3	2.62	1.029
Q10: Parents and community members engage in our innovation events/projects.	3.00	3	2.61	.965
Q1: At this school, we clearly understand what is meant by innovation.	3.00	3	2.54	1.401
Q7: Our school is autonomous (or is not afraid to take risk) in making decisions in support of innovation.	3.00	4	2.47	1.478
Q4: We have an innovation agenda aligned with the school vision.	3.00	3	2.43	1.459
Q15: Every teacher has an equal chance to present their innovation ideas at school meetings.	3.00	4	2.38	1.425
Q12: I need training to conduct innovation work/projects in my classroom.	3.00	3	2.25	1.396
Q11: The curriculum offers an excellent range of opportunities designed to motivate and inspire all students to innovate.	3.00	3	2.24	1.385
Q9: The work of the innovation team(s) is visible to everyone in the school.	3.00	3	2.21	1.445
Q16: The teaching pace is flexible enough to give teachers the time to implement innovation plans inside the classrooms.	3.00	3	2.19	1.395
Q17: Teachers have time to plan for innovation with colleagues.	2.00	3	2.14	1.409
Q8: We have enough resources to do innovation at this school.	2.00	3	2.06	1.368
Q14: Students at this school come up with innovation ideas.	2.00	3	2.00	1.321
Valid N (listwise)				

Table 9 shows the means and standard deviations for the enabling or hindering factors which Kindergartens face in implementing innovation. The item with the highest mean is “understanding why innovation is important for our students” with a mean of 3.27 and standard deviation of .758, which indicates that participants always understand why innovation is important for our students. This is followed by “leaders at my school demonstrate clear understanding of what teachers need to do to innovate”, “having visible school leadership involvement in innovative projects”, “teachers encourage students to work on innovation ideas inside and outside the classrooms”, “students engage in innovation work/projects inside the classroom” and “students’ innovation inside or outside class counts toward their assessment” with means of 3.05, 3.00, 2.90, 2.90 and 2.86 respectively and standard deviations of .961, .974, .867, .873 and 1.017 respectively which indicate that all these activities sometimes happen in kindergartens.

According to the scale used in this study, eight hindering factors were identified as their means are below 2.4 out of 4 on Likert scale. These are:

Q15: Every teacher has an equal chance to present their innovation ideas at school meetings.

Q12: I need training to conduct innovation work/projects in my classroom.

Q11: The curriculum offers an excellent range of opportunities designed to motivate and inspire all students to innovate.

Q9: The work of the innovation team(s) is visible to everyone in the school.

Q16: The teaching pace is flexible enough to give teachers the time to implement innovation plans inside the classrooms.

Q17: Teachers have time to plan for innovation with colleagues.

Q8: We have enough resources to do innovation at this school.

Q14: Students at this school come up with innovation ideas.

The lowest means is “students at kindergartens come up with innovation ideas” with a mean of 2.00 and standard deviation of 1.321. It seems that students’ ability to come up with ideas coupled with lack of resources for innovative projects, teachers’ lack of time to work with students on innovative ideas, and the inflexible teaching pace which does not allow teachers to implement innovative ideas, and lack of training on innovation are the key hindering factors to implementing innovation in KG schools.

Table 10: Factors of implementing innovation by categories

	<b>Mean</b>	<b>Ranking</b>
Category 1: School leadership factors	3.025	1
Category 2: School context factors	2.546	2
Category 3: Teachers factors	2.4175	5
Category 4: Parents and student’s factors	2.5033	3
Category 5: Curriculum, teaching and assessment factors	2.4775	4
Valid N (listwise)		

Table 10 shows that among the five categories of factors, school leadership factors ranked highest which indicates that school leadership pushes for implementing innovation in schools and encourages students and teachers to do so. In contrast, it seems that teacher related factors and the curriculum, teaching and assessment factors are not enabling innovation projects and ideas in kindergartens very much. The means

of these two categories of factors are 2.41 and 2.47 out of 5 on the scale. This requires particular attention from policy makers.

## 4.2 Results of question two

How do Kindergarten schools in the Al Ain implement innovation?

Innovation procedures in kindergartens: Nine factors related to innovation procedures in kindergartens were used to investigate if kindergartens implement all innovation procedures. The results are reported in Table 11.

Table 11: The innovation procedures in Kindergartens

	<b>Median</b>	<b>Mode</b>	<b>Mean</b>	<b>Std. Deviation</b>
Q21: The school brainstorms ideas of innovation.	3.00	4	2.58	1.136
Q22: The school selects some innovation ideas to work on	3.00	4	2.55	1.176
Q23: The school forms innovation project teams.	3.00	3	2.26	1.486
Q24: The school designates a project coach to lead each innovation project.	2.00	3	2.13	1.470
Q29: The team conducts a final evaluation of the whole innovation project.	2.00	2	2.11	1.482
Q28: The team improves the innovation project based on the assessment.	2.00	3	2.08	1.479
Q27: The team assesses the model or sample of the innovation project.	2.00	3	2.05	1.444
Q26: The team develops a model or sample for the innovation project.	2.00	3	1.98	1.443
Q25: The innovation team receives training specific to the project.	2.00	3	1.97	1.407
Valid N (listwise)				

Table 11 shows the means and standard deviations for the innovation procedures which Kindergarten's implement. The item with the highest mean is that "the school brainstorms ideas of innovation" and "the school selects some innovation ideas to work on" with means of 2.58 and 2.55 and standard deviations of 1.136 and 1.17 which indicate that kindergartens sometimes brainstorm ideas of innovation and select some innovation ideas to work on. However, the rest of the items are below 2.40 which is the threshold for a statement to be positive. In other words, two steps only of the nine steps to do innovative projects and ideas in schools are followed while other steps and procedures are not always followed. Examples of these steps unattended to include: "the school forms innovation project teams", "the school designates a project coach to lead each innovation project", "the team conducts a final evaluation of the whole innovation project", "the team improves the innovation project based on the assessment", "the team assesses the model or sample of the innovation project" and "the team develops a model or sample for the innovation project" with means of 2.26, 2.13, 2.11, 2.08, 2.05 and 1.98 respectively and standard deviations of 1.48, 1.47, 1.48, 1.47, 1.44 and 1.44. The lowest means of this domain are "The innovation team receives training specific to the project" and "The team develops a model or sample for the innovation project" which ranked below 2 out of 5. These results need further attention from education policy makers.

### **4.3 Qualitative data results**

Thematic analysis was used to show the qualitative results which were divided into two sections: the first is the enabling innovation factors and the second one is the hindering innovation factors. Under these two sections, we have six main themes which were shaped respectively: Resources, time, training, pace of teaching and

curriculum, need for innovation for students, and leadership. Specifically, five of them account as hindering innovation factors such as limited resources, limited time, insufficient training, pace of teaching and curriculum and little autonomy. On the other hand, only one theme was seen as a strong enabling factor which is leadership.

#### Theme one: Resources

School leaders and teachers provided different opinions but overall, teachers were not satisfied with the way their school leaders support them with resources which encourage innovation. Some of them (N=5) agreed that their schools gave them the chance to ask and choose resources as they wanted to plan for innovation activities, but they were not satisfied with the budget allocated for innovation. One of them said, her school was “very cooperative, because she gave teachers chance to select and decide what they want to bring depend on their needs when they are planning for innovation on a monthly basis only. So, the degree of satisfaction with innovation resources is low” (Participant 6). Another participant explained, “It was very challenging for us as teachers to prepare innovation resources especially as there is no budget under the innovation practice. Most of the kindergartens are not allocated a budget for the innovation activities because they account innovation activities as normal lesson activities that teachers could prepare in advance for their lessons, and most of teachers are totally not satisfied about that” (Participant 8).

Around half of the interviewed participants (N=13) were not satisfied because their kindergartens selected the innovation activities for them without asking them their needs. One of them mentioned, “school administration had given us a resources needed sheet and the Arabic and English head of faculty sat with us and ask to write down innovation resources for next year and then they will support us with required

resources but the obstacles were to expect future resources and asking for resources before planning for innovation activities. That's why the majority of teachers are not satisfied" (Participant 4). Another said, "After several meetings, we agreed on the topic... almost all are really not satisfied" (Participant 3).

However, two head of faculties were not satisfied because ADEK selected the innovation resources for them without asking the schools for their innovation plans or their innovation needs. One participant said, "in the beginning of each year our school receive different resources and some of them is related to innovation process which encourage the students higher order thinking which were selected by ADEK. But we had another innovation resources needs planed for our kindergarten, but ADEK did not provide innovation resources upon kindergarten request or upon teachers planning, it will take time to find efficient systems to provide innovation resources in kindergartens. We are not satisfied because we continue to have limited innovation resources which should be linked with our planning for innovation practices or to support our initiative innovation center in our kindergarten with robots, ipods, interactive electronic books. Vice principals have discussed this issue with school operations more than once, but ADEK support schools with budget and schools should utilize the using budget effectively to provide schools with innovation resources (Participant 18).

The other vice principal illustrated something similar. She said, "as you did not send email for the procurement department in ADEK to provide your schools with require innovation resources related to your innovation projects, we prefer to select our innovation resources after teacher planning for innovations projects, and I agreed on this. At the current time, we used our school budget to provide innovation resources

needed to our school during planning time so we can implement innovation projects successfully, but the budget is not enough to cover all innovation practices, we were not satisfied that much” (Participant 11). Another two principals were of the same view; they were not satisfied because they said that innovation resources were provided to different cycles but not to kindergartens.

### Theme Two: Limitation of time

For limitation of time, the majority of the participants (N=20) mentioned that time is one of the hindering factors which we should focus on to have successful implementation of innovation projects and they were all not satisfied with current practices. Participant 4, an English head of faculty in KG with level A in Irtiqaa inspection said, “I would ensure more time was given for teachers in planning and for students to be able to create their own innovation ideas from lessons to reflect on their learning and I was not satisfied with the limited time giving for innovation practices.” Another vice principal in KG with level B in Irtiqaa said, “it has taken time for change and for some teachers to come on board and give children time and the freedom to be innovative” (Participant 12).

Some of participants (N=6) believed that we need efficient planning for time management in innovation projects. However, not all of them were satisfied with current using of time. Participant 25 one of the Arabic kindergarten teachers in KG with level C in Irtiqaa inspection mentioned, “Time is very important because we try to push students to work on innovation activities on their own, but we may not reach to the stage of using innovation creatively due the burden on us to follow the pacing chart, administer many tests each term, cover learning outcomes in limited time, etc. We are running out of the time.” Another participant who is one of the English

kindergarten teachers in KG with level C in Irtiqa explained that, “Effective time management is a success aspect for most innovation projects; however, it is mostly challenging for innovation projects the limited time for school leaders, teachers and students for planning and implementing the innovation practices. For most innovation projects, time becomes a management that signals when something goes wrong or gets out of control” (Participant 28).

#### Theme Three: Insufficient Training

Almost all participants believed that they infrequently get training to conduct innovation projects in classrooms. All of them were not satisfied because of limited training and insufficient training provided. Participant 12 who is a vice principal explained, “Teachers need more intense outside exposure and training with regard to implementation of innovation in the class.” This is again seen by Participant 9’s comments, “Professional development training is essential to success in implementing innovation because we will become aware of the innovation concept when sharing teaching strategy ideas at a local PD meeting.”

#### Theme Four: Pace of Teaching and Curriculum

School leaders and teachers were not satisfied with the innovation implementation in teaching and curriculum. Few of them (N=2) agreed that their pedagogy encouraged them to plan for innovation activities inside classrooms, but they were not satisfied with innovation teaching practices. One of them said, “Innovation in teaching and curriculum are a term related to higher order thinking skills which require individuals to use their critical thinking, problem problems, and reasoning skills to come up with a new idea or use available ideas or objects in a smart way.”

(Participant 14). Another participant explained, “Our school aims to fulfill the philosophy of a student-centered in teaching process and in curriculum, therefore, every decision made is based on our student needs for that year. Having said that, our campus is currently working on acquiring a strong foundation for problem solving and creativity” (Participant 7).

However, two heads of faculties were not satisfied because ADEK assigned a specific outcomes-based curriculum for them without asking the schools for their innovation or creativity ideas to add to curriculum. One of these participants said, “In our school we are developing thematic integrated units that incorporate a project-based idea to compliment innovative learning” (Participant 12).

The other vice principal illustrated that, “Thinking creatively out of the box encourages and inculcate critical thinking in our students and finding solutions to problems in many different ways. Teachers must motivate students to be critical thinkers, to discover, and to find solutions to problems they encounter linked with 21st Century Skills (Communication, Collaboration, Critical Thinking, Cooperative learning)” (Participant 21). Another teacher was of the same opinion; she said “I have included innovation in my daily classroom teaching. Students are exposed to thinking creatively and to discover their surroundings. I have included the 21st century learning within my classroom practice. Students are encouraged to give their input and follow through with solving the problems.”

#### Theme Five: little autonomy

Regarding autonomy, the majority of the participants (N=21) mentioned that the autonomy is one of the hindering factors which we should focus on to have

successful implementation of innovation projects. It was seen that many were not satisfied with current practices. Participant 3, an English head of faculty in KG with level A in Irtiqa inspection said, “I would ensure more autonomy was given for teachers in planning and for students to be able to create their own innovation ideas from lessons to reflect on their learning and I was not satisfied with the limited autonomy giving for innovation practices.” Another vice principal in KG with level B in Irtiqa said, in many schools, for political reasons, school districts are powerless to create a new and autonomous innovative project, but most schools show that doing this is often critical to solving the innovator’s implementation (Participant 11).

A few of the participants (N=3) believed that we have enough autonomy in innovation projects. However, not all of them were satisfied with current use of time. In general, the majority of participants (N=21) were not satisfied with autonomy given that teachers only sometimes have enough autonomy for innovation with colleagues. As participant 4 mentioned that “an extremely centralized system, ADEK local control and weak improvement incentives affected innovation implementation. Also, many effective school practices are ignored, and community are underutilized.” A Vice Principal in a “Very good” kindergarten school added that “if you are evaluating, learning from mistakes and negotiating, then risks are calculated ones. This help you to move the school innovation practices forward. Risk cannot be avoided, and it limits the innovation opportunities.”

#### Theme Six: Leadership

Overall, teachers and administrators were satisfied with the way their school leaders support them in implementing innovation. All of them (N=23) agreed that their schools gave them the chance to plan for innovation activities, but they were not

satisfied with innovation procedures. One of them said, “Leadership can have a significant impact on a teacher’s motivation to innovate. Leadership style has been shown to support individual creativity, which is important in generating innovative work. It is also important in supporting teachers to engage in innovative practice. This can be happened through creating an atmosphere encouraging innovation, distributed leadership, supportive and a culture where failure is accepted as part of the innovation process” (Participant 18). Another participant explained, “Leadership at school level supports two important sides of innovation: the creation of ideas and effective management processes of testing and turning innovative ideas into reality” (Participant 8).

## **Chapter 5: Discussion**

The purpose of this study was to investigate the factors that facilitate or hinder the implementation of innovation in the Kindergarten schools in Al Ain and to identify the procedures or steps used in implementing innovation practices in KG schools in Al Ain. This chapter explores how the findings contribute to our understanding of the factors that facilitate or hinder the implementation of innovation in the Kindergarten schools in Al Ain and to identify the procedures or steps used in implementing innovation practices in KG schools in Al Ain. We conclude with recommendations for further research into best practices that may inform innovation practices and projects.

### **5.1 Discussion of results**

#### **5.1.1 The main factors that facilitate implementing innovation in Kindergarten schools in Al Ain**

The main finding from question one shows that the category which was found to have the most influence on the facilitation of the implementation of innovation in KG schools in Al Ain was school leadership factors. Both questions within this category scored “sometimes” on the five-point scale. Within this category, it was seen that “Leaders at my school demonstrate clear understanding of what teachers need to do to innovate” was the most influential. Leaders have direct influence over their staff in a school and have been shown to positively or negatively influence innovation (Kirkland & Stuch, 2009). Therefore, by showing an understanding of innovation and the needs of teachers to make this happen, more innovation will occur. Next, “leaders have visible school leadership involvement in innovative projects” was also noted as happening sometimes in schools. By setting joint goals for innovation, the entire team, teachers and leadership, are involved. Moolenaar, Daly and Slegers (2010) and Raven

(1990) noted that innovation will be more likely to happen through this shared goal setting process. This therefore strengthens the notion that leaders have a large facilitating factor when it comes to innovation in schools. This quantitative finding was further strengthened in the interview phase, when leadership was noted as the single most enabling factor for facilitating innovation in schools. More than half of teachers interviewed also reported that innovation should be modelled by the kindergarten leaders in their approach towards their team, which was also noted by Moolenaar, Daly, and Slegers (2010). This positive manner ensures all staff want to strive towards successful innovation practices for the success of the students. Chesler, Schmuck, and Lippitt (1963) noted that a principal can have a direct influence of innovation, with Kirkland and Sutch (2009) also reinforcing the importance of principals who encourage and set an environment conducive to innovation. Leaders can learn from this and not underestimate the impact they can have in the promotion and facilitation of innovation within a school setting.

The answer to which almost all teachers and school leaders noted as being the individual overall highest facilitating factor for implementing innovation, was “we understand the importance of innovation for our students” which indicates that school leaders and teachers almost always understand why innovation is important for our students. Based on the interview results, majority of the teachers and school leaders, believed that innovation is a key initiative for driving success in kindergartens in the long-term because building a strong innovation culture in schools ensures that innovation is a strategic focus for every teacher. This is a very positive finding and indicates that leadership should continue to support teachers, through training and guidance to have a greater understanding of innovation and its importance for students, as this will, in turn, encourage more innovation in the classroom. This understanding

is vital as many authors highlighted that innovation needs to occur in order to prepare students for working in the modern-day economy (Lee, 2011; Ramma, Samy & Gopee, 2015; Sawyer, 2006; Tan & Gopinathan, 2000).

The majority of school leaders and teachers mentioned that kindergartens shared the vision of their schools which included innovation, demonstrating a shared goal, which supports the implementation of innovation practices (Moolenaar, Daly & Slegers, 2010). Within the UAE, more than half of teachers reported that the innovation concept was brought about by the implementations of the Vision 2021, reinforcing the importance of shared goals.

The next facilitating factor was “teachers encourage students to work on innovation ideas inside and outside the classrooms,” which was noted as the most influential of the teacher factors. This was followed and closely related to “students engage in innovation work/projects inside the classroom” from the “parent and student factors” category. This was an encouraging finding, since Carroll, et al. (2015) noted that innovation in its “truest form” was when students initiate the innovation themselves, so allowing space for this within a classroom context is important. It is positive to note that within the classroom, teachers are allowing innovation and are understanding the skills which are required to do this (Roberts, 2011). In addition, much active learning happens outside the classroom so teacher should encourage the innovation inside and outside the classroom, with LeBlanc, Léger, Lang, and Litrette-Pitre (2015) encouraging less passive learning and more active learning in order to prepare students for innovation. The interviews reflected similar findings. Based on the interview results, most of the teachers and school leaders, stated innovation encourages them to try many different teaching methods, such as inquiry-based

learning in English, Math and Science, problem solving and project based learning for every unit which leads to 21st century skills. These innovative qualities were also advocated by Roberts (2011). Additionally, the majority of the interviewees stated that innovation is a term related to higher order thinking skills which require individuals to use their thinking skills to come up with new ideas (Bharadwaj & Menon, 2000). This displayed that those interviewed have knowledge of the innovation process.

Following this, the next innovation facilitating factor was “students’ innovation inside or outside class counts toward their assessment,” which was the most influential factor in the “curriculum, teaching and assessment factors” category. This indicates that school leaders and teachers sometimes believed that students’ innovation inside or outside class should count toward their assessment. This was an important finding since Banaji, Cranmer and Perrotta (2010) noted that often school assessments do not allow for creativity. Therefore, from these findings, if school innovation can count towards assessment, this will encourage more innovation within schools and teachers will feel less pressure to keep up with rigid curricula.

### **5.1.2 The main factors that hinder implementing innovation in Kindergarten schools in Al Ain**

Despite the majority of the findings of the quantitative survey being within the five-point scale score of “sometimes” and “occasionally”, there were some noted results which appeared to have a lower score and could be therefore seen as hindering factors.

The lowest scoring item was found to be “students at this school come up with innovation ideas.” Despite still falling within the “occasionally” score, it had the lowest mean of all the answers. Therefore, this is an item which needs to be addressed

in the classroom. As Roberts (2011) noted, students need to be prepared to be innovators. Therefore, it is the teachers' responsibility to plan their lessons in a way which provides opportunities for innovation in the classroom. Students will innovate when they learn actively, through experience (LeBlanc, Léger, Lang, & Litrette-Pitre, 2015) and where children can safely take risks in new and unfamiliar learning environments (Hogan, 1996).

The next lowest scoring item in the questionnaire was “we have enough resources to do innovation at this school” which was echoed in the interviews, where school leaders and teachers indicated that one of the major difficulties is that there are very few resources to support innovation in classrooms. Lack of resources has been shown to hinder innovation (Frenkel, 2003) and this needs to be addressed by school administration. However, once the curriculum is tailored to innovation, teachers can see which resources they need. The management of the school must understand that well-resourced classrooms will foster innovation.

Items such as “teachers have time to plan for innovation with colleagues”, and “the teaching pace is flexible enough to give teachers the time to implement innovation plans inside the classrooms” also scored low when looking at the mean scores of the questionnaires. These findings were echoed by the results of the interviews. All of those interviewed stated that time is mostly challenging for innovation projects and the questionnaire also highlighted that “the teaching pace is flexible enough to give teachers the time to implement innovation inside the classrooms” scored lowly. Time is restricted for school leaders, teachers and students for planning and implementing the innovation practices (Bruland & Mowery, 2004). This makes innovation difficult, but by having an atmosphere conducive to innovation, which prioritizes time for

planning and thinking about innovative projects, more innovation can occur. Banaji, Cranmer, and Perrotta (2010) did note that schools need to be more flexible and allow time for innovation, which is something schools should prioritize.

In addition to time being a barrier, based on the interview results, the majority of the teachers and school leaders believed that teachers aren't empowered to innovate and to take risks to think critically out of the box (García-Granero, Llopis, Fernández-Mesa & Alegre, 2015). This could be because innovation requires the support of school leadership to take hold across the kindergartens. (Oke, Munshi & Walumbwa, 2009) This again highlights the importance of having school leaders who develop a "climate" of innovation in school, allowing changes to occur and risks to be taken, even if the results are not successful first time (Chesler, Schmuck, & Lippitt, 1963; Moolenaar, Daly, & Slegers, 2010).

It also highlights the need for teachers to be well trained in order to have the skills to promote innovation. In the interviews, most school leaders and teachers believed that kindergartens faced lack of awareness of the innovation process, while majority of them reported that teachers and staff need more sufficient training with regard to implementation of innovation in kindergartens. This supports many studies which found that teachers need adequate training and continual professional development to implement innovation in the classroom (Carless, 1997; Girvan, Conneely & Tangney, 2016; Hamel, Turcotte & Laferrière, 2013; Leal-Rodríguez & Albort-Morant, 2018; Moolenaar, Daly, & Slegers, 2010; ).

Staff training is key to ensure all staff are fully on board and understand every aspect of innovation (Carles 1997; Girvan, Conneely & Tangney, 2016; Leal-Rodríguez & Albort-Morant, 2018). Turnover rates, hiring, and personnel process

affect the performance quality of who are responsible to implement innovation practices inside classrooms and the knowledge about innovation can be lost. Limited autonomy and local control for the centralized education system can also affect the innovation implementation (Kirkland & Sutch, 2009) and can leave teachers without the feeling of empowerment. This is also something which can be rectified by good leaders who encourage, foster and promote innovation.

More than half of those interviewed reported that it became difficult to implement innovation activities or projects because kindergartens work on most important requirements and demands of the school administrators (Vandenberghe, Huberman & Huberman, 1999).

In the interviews, teachers also reported that it is important to have specific criteria for assessing students in innovation, which could be linked to the findings in the questionnaires in which “student’s innovation inside or outside the class counts toward their assessment” scoring relatively highly. Furthermore, school leaders and teachers added in the interviews that an outcomes-based curriculum limited the opportunities for thinking out of the box, which was advocated by Boss (2012) who stated that preparing students for dealing with problems they will face in the future is achieved via enabling them to acquire thinking skills in ways that might not be provided through traditional teaching. Curriculum and assessment go hand in hand. Developing or making changes to one, requires changes to be made to the other. Adjustments to the curriculum can be difficult for teachers (Hanley & Torrance, 2011) but it is necessary in order to effectively implement innovation in the classroom. A curriculum tailored to innovation will, in turn, allow for assessments which look at innovative opportunities, not only at merely facts and figures. Assessing aspects such

as analytical thinking, collaborative working and research could be some areas which could be incorporated into assessments to gear them towards innovative teaching.

Within the wider school, the interviews highlighted that there is no specific innovation framework for kindergarten students from the ADEK and this forces leaders in kindergartens to create and found innovation projects which are related to students' age. This is also linked to the finding that school leaders and teachers' ideas of having a commonly communicated policy about the innovation so all staff will become familiar about it (Von Schomberg, 2013). School leadership has the responsibility to ensure that all staff are involved in the school improvement plan, which will encourage innovation within the school (Kirkland & Sutch, 2009). If innovation is a focus of improvement plans, then the development of frameworks and policies will come out of this. This also shows the need for school administration to have further guidance from above.

In addition to this, those interviewed believed that kindergartens need effective innovation teams. Moolenaar, Daly, and Slegers (2010) noted that those leaders who develop shared goals create an atmosphere where innovation can occur. One way of developing shared goals is to work as a team and a desire for this is seen in the results of those interviewed.

### **5.1.3 Procedures followed to implement innovation in KG schools**

Results of question two identify the procedures or steps used in implementing innovation practices in KG schools in Al Ain. The step with the highest score was found to be the question which addressed the fact "The school brainstorms ideas of innovation", closely followed by "The school selects some innovation ideas to work

on.” Serdyukov (2017) noted that the first stage of the innovation process is an idea, with the second being implementation, followed by change. Therefore, it is important to note the brainstorming of ideas of innovation is foundational to innovation with the selection of ideas to work on also being the very core of implementing innovation in schools as suggested by Serdyukov (2017). This finding highlighted a number of different aspects, one of which may be that most of the kindergartens leaders and teachers believed in the importance of brainstorming innovation ideas and selecting from them best ideas, which might mean that they implement the first two stages of the innovation process successfully (Serdyukov, 2017).

Following these factors, all other factors related to the implementation of innovation only scored “occasionally” which highlighted that they were not seen as playing a large role in implementing innovation in KG schools in Al Ain. A major theme of these results was the place of the team in innovation implementation. Kimmelman (2010) noted that innovation is highly collaborative. Therefore, by not placing an emphasis on forming an innovation team which develops a model, evaluates the project and makes improvements, this leads to difficulties in implementing innovation and will result in ineffective innovation. The results showed that items such as “the team develops a model or sample, the team assesses the model or sample, the team improves the innovation project based on the assessment, the team conducts a final evaluation of the whole innovation project, the school designates a project coach to lead each innovation project, and the school forms an innovation project team,” all scored “occasionally” highlighting that schools are not placing innovation teams in high priority. Moolenaar, Daly, and Slegers, (2010) noted that for innovation to happen, continuous improvements are always needing to be made. Lee (2011) also added that teachers need to become reflective practitioners, questioning current

teaching method and reconstructing new ideas. All of this can happen within a team setting. Therefore, school leadership needs to place an emphasis on innovation teams within schools.

Linking with previous results from question one, the lowest score in this section was “the innovation team receives training specific to the project,” again highlighting the need for proper training.

#### **5.1.4 Improving innovation in KG schools**

For question three the study found factors which hinder implementing innovation in Kindergarten schools in Al Ain. The procedures used in implementing innovation practices in KG schools in Al Ain were of importance to improve the implementation of innovation in KG schools.

With regard to removing those factors which hinder innovation, school leaders play a vital role. Leaders have direct influence over their staff and should assume the role of modelling innovation within the school. Leaders should continue to promote an environment conducive to innovation where risk taking is encouraged, staff and leadership set shared goals for innovation coupled with frameworks for implementation and staff have the training, resources and time to make innovation happen. By enforcing these changes, staff will feel empowered to use innovation in resources and technology and will plan interesting and innovative lessons, free from the demands of strict assessments and curriculum. This will directly impact the students who will have the guidance and freedom to come up with innovation ideas and will be more prepared to be innovators themselves.

Schools should continue to brainstorm ideas of innovation. Schools should be made aware of the importance of having an innovation team and of the roles of this team, as highlighted by Kimmelman (2010) and Serdyukov (2017), and they also should consider adopting an “innovation coach” to guide the team through the innovation process. In addition to this team, building strong connections with parents and community were one of the improving steps for successful innovation practices.

## **5.2 Conclusion**

This study has shown that the main factors which facilitate or hinder implementing innovation in Kindergarten schools in Al Ain, the procedures used in implementing innovation practices and the improvement recommendations for implementing innovation in KG schools.

First of all, we recommended for ADEK to focus on the following categories in order of importance: teacher factors, curriculum, teaching and assessment factors, parents and students’ factors, school context factors and finally school leadership factors. As the facilitating innovation factors (6 factors) are less than hindering innovation factors (11 factors), school leaders are recommended to start with the hindering innovation factors and focus on creating an action plan to overcome them within the kindergartens.

School leaders might start with using time effectively and create a timeline for planning and implementing innovation practices. It is very important to make connection between student’s innovation practices and assessments to make sure students understand the concepts and are learning.

Moreover, kindergartens are recommended to create innovation teams and enrich the outcomes-based curriculum with the 21<sup>st</sup> century skills, such as critical thinking, problem solving and innovation skills.

It is recommended that ADEK utilize innovation resources and technology and to collaborate with kindergartens to plan for their needs of innovation resources, dependent upon the teaching and learning planning.

School leaders also should be clear about the necessity of innovation, provide sufficient training and plan for interesting innovative ideas for KG students.

The education system in the UAE should promote autonomous, risk taking teachers and leaders who are willing to try new things.

Finally, it is beneficial to have common and shared policies with a common framework for implementing the innovation practices, especially in the early stage. ADEK needs to reduce the heavy requirement and demands upon teachers and build strong connections with parents and communities to implement innovation ideas and practices.

### **5.3 Future research**

For future research, the following topics could be investigated:

- The perspectives of students in different cycles of the innovation concept and how to implement it inside schools.
- Innovation as a skill and how students gain this from the teaching and learning processes.

- A research focus could be extended to cover other government and private schools in different cycles to better understand the innovation implementation in education field.

Although level of education, years of experience, and position titles of participants did not have a significant impact on the hindering and facilitating innovation and its process, researchers should continue to inspect these variables in a more in-depth way.

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## Appendix A

التاريخ: 2017/04/05

### لمن يهمه الأمر

نود إفادتكم علماً بأن الطالبة: أسماء سعيد أحمد خذيل

الرقم الجامعي : 200609894

التخصص : ماجستير قيادة تربوية

مسجله في برنامج الماجستير وتقوم بإعداد بحث بعنوان:

Challenges to innovation in KG schools in Al Ain:  
The perspectives of teachers and school principals

التحديات التي تواجه الابتكار في مدارس الروضة في العين:  
وجهات نظر المعلمين ومديري المدارس

من ضمن متطلبات برنامج الماجستير. لذا نرجو التكرم بالموافقة على تسهيل مهمتها البحثية.

شاكرين ومقدرين حسن تعاونكم.

هذا وتفضلوا بقبول فائق التحية والتقدير.

مكيق برنامج الماجستير

د. هالة الجويرص



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ص.ب 15551، العين، الإمارات العربية المتحدة  
ت +971 3 713 6249 ت +971 3 713 6260  
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## Appendix B



مجلس أبوظبي للتعليم  
Abu Dhabi Education Council  
التعليم أولاً Education First

Date: 14 <sup>th</sup> May 2017	التاريخ: 14 مايو 2017
Ref:	الرقم:
To: Public Schools Principals,	السادة/ مديري المدارس الحكومية
Subject: Letter of Permission	الموضوع: تسهيل مهمة باحثين
Dear Principals,	تحية طيبة وبعد،،،
The Abu Dhabi Education Council would like to express its gratitude for your generous efforts & sincere cooperation in serving our dear students.	يطيبُ لمجلس أبوظبي للتعليم أن يتوجه لكم بخالص الشكر والتقدير لجهودكم الكريمة والتعاون الصادق لخدمة أبنائنا الطلبة.
You are kindly requested to allow the researcher/ <b>ASMA SAEED AHMED SALEH KHETHAIL</b> , to complete her research on:  <b>Challenges to innovation in KG schools in Al Ain: The perspectives of teachers and school principals</b>	ونود إعلامكم بموافقة مجلس أبو ظبي للتعليم على موضوع الدراسة التي ستجريها الباحثة/ أسماء سعيد أحمد صالح خثيل، بعنوان:  <b>Challenges to innovation in KG schools in Al Ain: The perspectives of teachers and school principals</b>
Please indicate your approval of this permission by facilitating her meetings with the sample groups at your respected schools.	لذا، يرجى التكرم بتسهيل مهمة الباحثة ومساعدتها على إجراء الدراسة المشار إليها.
For further information: please contact Mr Helmy Seada on 02/6150140	للاستفسار: يرجى الاتصال بالسيد/ حلمي سعدة على الهاتف 02/6150140
Thank you for your cooperation.	شاكرين لكم حسن تعاونكم
Sincerely yours,	وتفضلوا بقبول فائق الاحترام والتقدير،،،
 <b>محمّد سالم محمد الظاهري</b> <b>المدير التنفيذي لقطاع العمليات المدرسية</b> 	

## Appendix C

Study Title: Challenges to innovation in KG schools in Al Ain: The perspectives of teachers and school principals
---

Researcher: Asma Saeed Ahmed Khethail
---------------------------------------

### **Participation is voluntary**

It is your choice whether or not to participate in this research. If you choose to participate, you may change your mind and leave the study at any time. Refusal to participate or stopping your participation will involve no penalty or loss of benefits to which you are otherwise entitled.

### **What is the purpose of this project?**

The purpose of this research is to improve innovation practices in KG schools in Al Ain.

### **How long will I take part in this project?**

Your participation will take approximately one month to complete.

### **What can I expect if I take part in this project?**

As a participant, you will sign this consent and pass two stages. First step one: to fill application, step two: interview or questionnaire.

### **What are the risks and possible discomforts?**

If you choose to participate, the effects maybe will be spend a time in discussion & applying the research(one month).

### **Are there any benefits from being in this project?**

At the end of the study, we will provide a thorough explanation of the project. Moreover, we I will provide of the suggestions to improve innovation practices in KG schools in Al Ain. I will recommend following development plan to help the participant in her difficulty to implement innovation practices inside school. We will describe the potential implications of the results of the project both if our suggestions are supported and if they are disconfirmed. If you wish, you can send an email message to [Asma Saeed khethail ([asma.khethail@adec.ac.ae](mailto:asma.khethail@adec.ac.ae))] and I will send you a copy of summaries of our results.

### **Will I be compensated for participating in this project?**

No, but participant will get thankful email for their participation by researcher email ([asma.khethail@adec.ac.ae](mailto:asma.khethail@adec.ac.ae)).

### **If I take part in this project, how will my privacy be protected? What happens to the information you collect?**

The data we collect will be kept confidential. Your name will be stored under nickname, in a locked office in a locked file cabinet or on a password-protected computer. I won't use your name or information that would identify you in any publications or presentations. Just for the task aim only and under UAEU academic policies.

The information with your name on it will be analyzed by the researcher(s) and may be reviewed by people checking to see that the project is done properly. *The information may also be seen by instructor: Dr. Ali S. Ibrahim.* The responsible for this research is *Asma Saeed Ahmed khethail* who can be reached

at Mobile number 0501227322, P.O.BOX 90770, Email: asma.khethail@adec.ac.ae and the supervisor instructor is Dr. Ali S. Ibrahim who can be reached at Building F3 – Room 023, ali\_saidebrahim@uaeu.ac.ae.

- If you have questions, concerns, or complaints,
- If you would like to talk to the project responsible,
- If you think the project has harmed you, or
- If you wish to withdraw from the study.

This project under UAEU policies. They can be reached at 03767 3333 or <http://www.uaeu.ac.ae/en/contact.shtml> for any of the following:

- If your questions, concerns, or complaints are not being answered by the research team,
- If you cannot reach the research team,
- If you want to talk to someone besides the project responsible, or
- If you have questions about your rights as a research participant.

**Statement of Consent** I have read the information in this consent form. All my questions about the research have been answered to my satisfaction.

### SIGNATURE

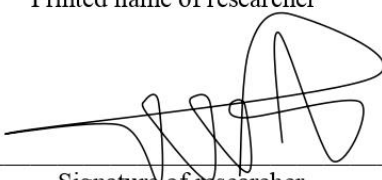
Your signature below indicates your permission to take part in this research. You will be provided with a copy of this consent form.

\_\_\_\_\_  
Printed name of participant

\_\_\_\_\_  
Signature of participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Asma Saeed Khethail  
Printed name of researcher

\_\_\_\_\_  
  
Signature of researcher

\_\_\_\_\_  
18 April 2017  
Date

## **Appendix D**

### **INNOVATION PRACTICES IN KG SCHOOLS IN AL AIN**

Dear Administrator/Teacher,

This questionnaire is part of my Master degree in Education at UAE University. It aims at collecting information on the degree to which innovation is practiced in KG schools in Al Ain city. Therefore, I need your cooperation to complete this questionnaire. This questionnaire was approved by ADEK. Please do not write your name or school name on the survey as participation is meant to be anonymous. Please read statements carefully and answer them honestly. The approximate time to complete the questionnaire is 10 minutes. Your answer to this questionnaire will be used for academic purposes only and all information will be kept confidential. If you have any queries, please contact researcher by [200609894@uaeu.ac.ae]

Thank you for your time and cooperation.

The researcher

**INNOVATION PRACTICES IN KG SCHOOLS IN AL AIN****Part 1: Demographic Information**

Degree	<input type="checkbox"/> Diploma	<input type="checkbox"/> Bachelor
	<input type="checkbox"/> Master	<input type="checkbox"/> PHD
Position	<input type="checkbox"/> Head of faculty	<input type="checkbox"/> Teacher
	<input type="checkbox"/> Principal	<input type="checkbox"/> Vice Principal
Years of experience in education	<input type="checkbox"/> 0-5	<input type="checkbox"/> 6-10
	<input type="checkbox"/> 11-15	<input type="checkbox"/> 15+

## Part 2: Factors of school innovation

For each of the following statements, please indicate your answer using the following scale:

0 = Never    1 = Rarely    2 = Occasionally    3 = Sometimes    4 = Always

Statement	0	1	2	3	4
<b>Section 1: Evaluate your school innovation practices using the following FACTORS:</b>					
1. At this school, we clearly understand what is meant by innovation.					
2. We understand why innovation is important for our students.					
3. Our school has an inspiring, shared vision for innovation.					
4. We have innovation agenda aligned with the school vision.					
5. Leaders at my school demonstrate clear understanding of what teachers need to do to innovate.					
6. We have visible school leadership involvement in innovative projects.					
7. Our school is autonomous (or is not afraid to take risk) in making decisions in support of innovation.					
8. We have enough resources to do innovation at this school.					
9. The work of the innovation team(s) is visible to everyone in the school.					
10. Parents and community members engage in our innovation events/projects.					
11. The curriculum offers an excellent range of opportunities designed to motivate and inspire all students to innovate.					
12. I need training to conduct innovation work/projects in my classroom.					
13. Students engage in innovation work/projects inside the classroom.					
14. Students at this school come up with innovation ideas.					
15. Every teacher has an equal chance to present their innovation ideas at school meetings.					
16. The teaching pace is flexible enough to give teachers the time to implement innovation plans inside the classrooms.					
17. Teachers have time to plan for innovation with colleagues.					
18. Teachers encourage students to work on innovation ideas inside and outside the classrooms.					
19. Students' innovation inside or outside class counts toward their assessment					
20. At this school, teachers use innovative teaching methods.					

<b>Section 2: When my school works on any INNOVATIVE idea or project, these actions are followed:</b>					
21. The school brainstorms ideas of innovation.					
22. The school selects some innovation ideas to work on.					
23. The school forms innovation project teams.					
24. The school designates a project coach to lead each innovation project.					
25. The innovation team receives training specific to the project.					
26. The team develops a model or sample for the innovation project.					
27. The team assesses the model or sample of the innovation project.					
28. The team improves the innovation project based on the assessment.					
29. The team conducts a final evaluation of the whole innovation project.					

*Thank you for your collaboration  
The researcher*

ممارسات الابتكار في مدارس رياض الأطفال في مدينة العين

إلى الإدارة أو المُعلم.

هذا الاستبيان هو جزء من أطروحتي في ماجستير القيادة التربوية في جامعة الإمارات العربية المتحدة والذي يهدف إلى جمع المعلومات عن مدى ممارسة الابتكار في مدارس رياض الأطفال في مدينة العين، لذلك أنا بحاجة إلى تعاونكم لاستكمال هذا الاستبيان.

تمت الموافقة على هذه الاستبيان من قبل مجلس أبوظبي للتعليم. يرجى عدم كتابة الاسم أو ذكر اسم المدرسة ليكون المُشارك مجهول الهوية. الوقت التقريبي لاستكمال الاستبيان هو 10 دقائق. يرجى قراءة البيانات بعناية والإجابة عليها بصراحة وصدق.

سيتم استخدام هذا الاستبيان لأغراض أكاديمية فقط وسيتم الاحتفاظ بسرية جميع المعلومات. إذا كان لديك أي استفسارات حول محتوى هذا الاستبيان، يرجى التواصل مع الباحث عن طريق [uaeu.ac.ae@200609894](mailto:uaeu.ac.ae@200609894)

نشكر حسن تعاونكم وجهودكم معنا

الباحث

ممارسات الابتكار في مدارس رياض الأطفال في مدينة العين

الجزء 1: المعلومات الديموغرافية

<input type="checkbox"/>	بكالوريوس	<input type="checkbox"/>	دبلوم	المستوى التعليمي.
<input type="checkbox"/>	دكتوراه	<input type="checkbox"/>	ماجستير	
<input type="checkbox"/>	مساعد مدير	<input type="checkbox"/>	مدير	الوظيفة
<input type="checkbox"/>	معلم	<input type="checkbox"/>	رئيس هيئة تدريس	
<input type="checkbox"/>	6-10	<input type="checkbox"/>	0-5	سنوات الخبرة في التعليم
<input type="checkbox"/>	15+	<input type="checkbox"/>	11-15	

الجزء 2: عوامل الابتكار في المدارس

الإرشادات: لكل من هذه العبارات، يرجى الإشارة إلى إجابتك باستخدام المقاييس التالية

0=أبداً 1=نادراً 2=أحياناً 3=عادةً 4=دائماً

4	3	2	1	0	البيان
القسم 1: قيم ممارسات الابتكار في مدرستك تبعاً للعوامل التالية:					
					1. في هذه المدرسة، نفهم بوضوح معنى الابتكار
					2. ندرك أسباب أهمية الابتكار لطلبتنا في المدرسة
					3. لدى مدرستنا رؤية واضحة ومشاركة للابتكار
					4. لدينا جدول أعمال مبتكر متنسق مع رؤية المدرسة.
					5. يدرك قادة مدرستنا ماهية احتياجات المعلمين للابتكار
					6. تشارك قيادة المدرسة في المشاريع الابتكارية بشكل مرئي وواضح
					7. لدى مدرستنا الاستقلالية الكاملة في اتخاذ القرارات والإجراءات اللازمة مهما كانت لدعم الابتكار
					8. لدينا ما يكفي من المصادر اللازمة للابتكار في هذه المدرسة
					9. يظهر عمل فريق الابتكار بشكل واضح في المدرسة
					10. يشارك أولياء الأمور وأعضاء المجتمع بمشاريعنا الابتكارية
					11. يقدم المنهج مجموعة متنوعة من الفرص المصممة لتشجيع الطلبة وحثهم على الابتكار
					12. أنا بحاجة إلى التدريب لتولي إدارة عمل ابتكاري أو مشاريع ابتكارية في صفي
					13. يشارك الطلبة في مشاريع ابتكارية داخل الصفوف
					14. يبادر الطلبة في مدرستنا بتقديم أفكار ابتكارية
					15. تتاح فرص متساوية لكل معلم لعرض أفكاره الابتكارية أثناء الاجتماعات في المدرسة
					16. تتسم وتيرة التدريس بالمرونة الكافية مما يعطي المعلمين الوقت الكافي لتطبيق المشاريع الابتكارية داخل الصفوف الدراسية
					17. يمتلك المعلمين الوقت الكافي للتخطيط لمشاريع الابتكار مع زملائهم
					18. يشجع المعلمون الطلبة للعمل على الأفكار الابتكارية داخل الفصول الدراسية وخارجها
					19. يحتسب ابتكار الطلبة داخل الصف أو خارجه ضمن تقييمهم
					20. يستخدم المعلمون أساليب ابتكارية للتدريس في المدرسة

القسم 2: أثناء عمل مدرستي على أي مشروع أو فكرة ابتكاريه، تتبع المدرسة الإجراءات التالية :					
					21. تقوم المدرسة بعصف ذهني للأفكار الابتكارية
					22. تختار المدرسة بعض الأفكار الابتكارية المناسبة لبدء العمل
					23. تقوم المدرسة بتشكيل فرق عمل للمشاريع الابتكارية
					24. تقوم المدرسة بتعيين قائد لكل مشروع ابتكاري
					25. يتم تقديم تدريب لفريق العمل خاص بالمشروع الابتكاري
					26. يُطوّر فريق العمل تصميم أو نموذج أولي لمشروع الابتكار
					27. يُقيّم فريق العمل التصميم أو النموذج الأولي لمشروع الابتكار
					28. يُحسّن فريق العمل مشروع الابتكار بناءً على التقييم
					29. يقوم فريق العمل على تقييم نهائي كامل لمشروع الابتكار

شكراً لحسن تعاونكم معنا

الباحث

## Appendix E

Challenges to innovation in KG schools in Al Ain:  
The perspectives of teachers and school principals  
(Semi Interview)

### Part I: Demographic Information

Degree	<input type="checkbox"/> Diploma	<input type="checkbox"/> Bachelor
	<input type="checkbox"/> Master	<input type="checkbox"/> PHD
Position	<input type="checkbox"/> Head of faculty	<input type="checkbox"/> Teacher
	<input type="checkbox"/> Principal	<input type="checkbox"/> Vice Principal
Years of experience in education	<input type="checkbox"/> 0-5	<input type="checkbox"/> 6-10
	<input type="checkbox"/> 11-15	<input type="checkbox"/> 15+

1.	Can you describe how your school first became aware of innovation concept?
2.	How do you see yourself and your students today, in terms of innovation practices?
3.	What does innovation mean to you?
4.	Can you describe any particularly difficult in your school related to innovation factors?
5.	Can you describe how your school fit into innovation process?
6.	To what extent do you consider your school active in innovation steps?
7.	What, if anything, would you change about your school if you could?
8.	How does your school view your role in innovation team?

تحديات الابتكار في مدارس رياض الأطفال في مدينة العين  
وجهة نظر المعلمين ومدراء المدارس  
(مقابلة مقننه)

القسم 1: المعلومات الديموغرافية (السكانية)

<input type="checkbox"/>	بكالوريوس	<input type="checkbox"/>	دبلوم	المستوى التعليمي.
<input type="checkbox"/>	دكتوراه	<input type="checkbox"/>	ماجستير	
<input type="checkbox"/>	معلم	<input type="checkbox"/>	إداري	الوظيفة
<input type="checkbox"/>	6-10	<input type="checkbox"/>	0-5	سنوات الخبرة في التعليم
<input type="checkbox"/>	15+	<input type="checkbox"/>	11-15	

1.	هل يمكن أن نخبرنا كيف أصبحت مدرستك على علم بمفهوم الابتكار؟
2.	كيف ترى نفسك وطلابك اليوم في مدى فهم وتطبيق ممارسات الابتكار؟
3.	ماذا يعني الابتكار بالنسبة لك؟
4.	هل يمكن أن نخبرنا عن أي صعوبة خاصة بعوامل الابتكار في مدرستك؟
5.	هل يمكن أن نخبرنا عن كيفية ملائمة مدرستك ضمن العمليات الابتكارية؟
6.	إلى أي مدى تعتبر مدرستك نشطة وفعالة في تطبيق خطوات الابتكار؟
7.	ما هو الشيء الذي يمكن أن تغيره في مدرستك إن وجد؟
8.	كيف تنظر مدرستك إلى دورك ضمن فريق عمل الابتكار؟