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The Role of Using the Digitization on Achievement and Motivation of the 6th Graders in Science and Teachers' Trends Towards Using Digitization in Government Schools in Bethlehem District

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Dedication

To the spirit of my dear father. May God have mercy on him.

To my dear mother, prolong the age of God.

To those who encouraged me to continue my career My Life-long companion, My husband, Ahmed Qash

To my brothers Ammar, Mohammed, Mahmoud, Ahmed and my dear sister Ghader

To my children Yara, Lana, Sarah, Yasmin.

For everyone who encouraged me and helped me complete this work

Declaration

I Certify that this thesis submitted for the degree of Master, is the result of my own research, except where otherwise acknowledged, and that this study (or any part of the same) has not been submitted for a higher degree to any other university or institution.

Signed 

Abeer Adeeb Odah Qash

Date: 20/07/2019

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In addition, many thanks go to my colleagues in the Ministry of Education and the Directorate of Education in Bethlehem; especially Staff of the Department of Educational Technologies who have spared no effort in providing information and data, also many thanks to the administrators, teachers and students of Mariam Al-Athra Primery School for Girls, Salah Aldien Basic School for boys, Al-khader Primery School for girls, Al-Shaheed and Said Al-Ass Primery School for Boys, where the study was carried out for all their assistance and support. Special thanks to T. Ghada Shalan from Mariam Al-Athra Primery School for Girls.

Abstract

The present study aimed at investigating the Role of using digitization on students' achievement and motivation in science and the attitude of their teachers to use it. The descriptive analytical approach was used in the analysis of the educational module (unit of human body organs); this study utilized the quasi-experimental type methodology. The study has been applied on a purposeful sample of the 6th graders in governmental schools, in Bethlehem District in the academic year 2018/2019. The sample included (122) students (60 males and 62 females) at Salah al-Deen Basic School for Boys, Al-Shaheed Said Al-Ass Basic School for Boys, Mariam Al-Athra Primary School for Girls and Al-Khader Primary School for Girls. Students were assigned to experimental and control groups; the experimental group was taught by using digitization and the controlled one was taught by the Normal method.

An achievement test was prepared and a questionnaire for motivation, in addition to the questionnaire for the teachers' attitudes. Content validity and reliability were established for all instruments, it was 0.9 for the questionnaire and 0.8 for the test. The experiments have lasted for two months. Achievement tests were performed based on Bloom's Taxonomy analysis for the taught units; at the same time, a questionnaire was distributed to the students to measure the effect of using digitization. The means and standard deviation, (2-way ANCOVA) test, were used in the study. The findings of the study showed that there is no significant statistical difference in the achievement test due to the effect of the method used in teaching the 6th graders when compared to the four schools.

Therefore, digitization schools are statistically significant on Analysis, Synthesis, and Application and in favor of the girls' schools. Using Bloom's Taxonomy objectives and the

results of the study indicate that there is a strong positive association in the students' attitudes to learn how to use digitization in both level of internal and external motivation.

Hence, the significant level of the four domain .045, .01 and 0.007, which indicate that there is significant difference between the internal motivation, external motivation, total motivation, and exam results.

Moreover, teachers' attitudes in the four areas were positive with regards to using digitization as an instructional tool in teaching science, and the overall score of their responses to all paragraphs of the questionnaire. In addition, teachers' attitudes were positive towards the use of digitization as an instructional tool in teaching science. The study shows that the attitudes of science teachers towards the use of digitization as an educational tool in teaching science are positive, regardless of the gender, qualification or years of experience. This encourages the use of these positive trends in the use of computers in teaching as an effective teaching method to improve the learning process and its outcomes.

Based on those findings, the study recommends that the training programs may be offered to train teachers on how to use digitization; students could be provided with opportunities to practice using it.

Key Words: Digitization – Motivation –Achievement-Trends

دور استخدام الرقمنة في تحصيل ودافعية طلاب الصف السادس في العلوم واتجاهات المعلمين نحو استخدام الرقمنة في المدارس الحكومية في محافظة بيت لحم

اعداد: عبير اديب عودة قاش.

اشراف: د. ابراهيم عوض

الملخص

هدفت الدراسة الحالية إلى دراسة دور استخدام الرقمنة في تحصيل الطلبة ودوافعهم نحو مادة العلوم وموقف معلميهم من استخدام هذه التقنية. تم استخدام المنهج الوصفي التحليلي في تحليل الوحدة التعليمية (وحدة أعضاء جسم الإنسان)؛ كما واستخدمت المنهج شبه التجريبي. تم تطبيق هذه الدراسة على عينة من طلبة الصف السادس في المدارس الحكومية في منطقة بيت لحم في العام الدراسي 2019/2018. شملت العينة (122) طالباً (60 ذكور و 62 إناث) في كل من مدارس صلاح الدين الأساسية للبنين والشهيد سعيد العاص الأساسية للبنين ومريم العذراء الابتدائية للبنات والخضر الابتدائية للبنات. تم توزيع الطلبة ضمن مجموعات تجريبية وضابطة، وتم تدريس المجموعة التجريبية باستخدام الرقمنة وتدريس الضابطة بالطريقة التقليدية. قامت الباحثة بإعداد اختبار تحصيل واستبيان للدافعية، واستبيان لفحص اراء المعلمين. تم التأكد من صحة المحتوى والموثوقية لجميع الأدوات. وكانت النتائج كالتالي: 0.9 بالنسبة للاستبيان و 0.8 للاختبار. واستمرت التجارب لمدة شهرين. تم إجراء اختبارات التحصيل بناءً على تحليل تصنيف بلوم للوحدات التي تم تدريسها، وتم

توزيع استبيان على الطلبة لقياس تأثير استخدام الرقمنة. استخدمت الدراسة الوسط الحسابي). أظهرت نتائج الدراسة عدم وجود فرق إحصائي كبير ANCOVAوالانحراف المعياري (اختبار في اختبار التحصيل بسبب تأثير الطريقة المستخدمة في تدريس طلبة الصف السادس مقارنة بالمدارس الأربع. لذلك ، تعد مدارس الرقمنة ذات دلالة إحصائية في التحليل والتركيب والتطبيق وفي صالح مدارس البنات. وباستخدام أهداف تصنيف بلوم، تشير نتائج الدراسة إلى وجود ارتباط إيجابي قوي في مواقف الطلبة في تعلم كيفية استخدام الرقمنة، على مستوى الدافعية الداخلية والخارجية. بالإضافة إلى ذلك، أظهر تأثير كل من الدافع الداخلي والتحفيز الخارجي على نتائج امتحان الطلبة للطلبة الذين يستخدمون الرقمنة في التعليم. وقد كان المستوى الهام للنطاق الأربعة .045 و .01 و 0.007 والذي يشير إلى وجود فرق كبير بين الدافع الداخلي والتحفيز الخارجي والتحفيز الكلي ونتائج الاختبار. علاوة على ذلك، كانت مواقف المعلمين في المجالات الأربعة إيجابية فيما يتعلق باستخدام الرقمنة كأداة تعليمية في تدريس العلوم، والنتيجة الكلية لإجاباتهم على جميع فقرات الاستبيان. بالإضافة إلى ذلك، كانت مواقف المعلمين إيجابية أيضًا تجاه استخدام الرقمنة كأداة تعليمية في تدريس العلوم. كما وتوضح الدراسة أن مواقف معلمي العلوم تجاه استخدام الرقمنة كأداة تعليمية في تدريس العلوم إيجابية، تبعا للجنس أو المؤهل أو سنوات الخبرة. بناءً على هذه النتائج، توصي الدراسة بتقديم برامج لتدريب المعلمين على كيفية استخدام الرقمنة؛ وتزويد الطلبة بفرص لممارسة استخدامه.

الكلمات المفتاحية: الرقمنة – الحافز – التحصيل – الاتجاهات

List of Abbreviations

ICT	Information and communications technology
PNA	Palestinian National Authority
CEO	Chief Executive Officer
EISD	Edgewood Independent School District
LCD	Liquid Crystal Display
UNESCO	United Nations Educational, Scientific and Cultural Organization
OECD	Organization for Economic Co-operation and Development
MOE	Ministry Of Education
IM	Internal Motivation
EM	External Motivation

Table of Contents

List of Tables

List of Figures

CHAPTER ONE:

Background of The Study

1.1. Introduction:

Education has been and remains one of the most important ways in which people have successfully passed experiments and build the civilizations of successive generations. With these various means of education in different times and places, the multiple topics of study, and the development of technology which is only a cumulative result of learning and education. These educational means aim at conveying the idea to students in the simplest and the best possible way. Additionally, they aim at providing information, ideas, and skills in multiple ways to deliver information and consolidate knowledge. It should note that these educational means have developed from being traditional means into more modern ones.

At the same time, concerning the Normal one-way learning from sender to recipient, modern teaching methods were used to make use of modern technology to change the learning process to become easier, more efficient, and enjoyable. Such tool may include, but not limited to, computers, various tablets, the Internet.

Nowadays, many new technologies emerge and definitely contribute to facilitate the completion of work in different scientific and practical aspects of life. As a result, this has led to technical, social, and economic transformations that directly contributed to the advancement of societies.

Prior to the 21st century, education was typically teacher-centered with content transmitted from the teacher to the learner (Wan and Gut, 2011; OECD, 2013). However, in the late

20th century, and with the advent of powerful and accessible information and Communication Technologies (ICTs), such as computers and the internet, the accompanying technology has caused a rise of globalism, advances in psychology and the neurosciences, which have contributed to the emergence of a new perspective of learning, which is characterized by being learner-centered, active, and collaborative (OECD, 2013; Wan and Gut, 2011; Mayer, 2001, 2005, 2009).

The development of education from a Normal lecture-by-expert model of instruction to learner-centered pedagogies requires a shift in teachers' roles and attitudes
(Wismath, 2013).

Although there is a contention regarding the degree to which teachers engage in the process of developing their teaching practice, the impact of digital technologies upon teaching and learning demonstrated by the proliferation of its use in the educational digital resources made available via the Internet.

Technology has become one of the most demanded pillars of the 21st century, as technological progress has entered all spheres of life. Education has been one of the most important areas affected by the ICT development and progress, which is the result of science and knowledge. At the same time, it is one of the pillars of the development of educational work, which has recently become the focus of attention of educators and those interested in the educational process. ICT has become one of the elements that is included within modern curriculum. (Wan & Gut, 2011).

ICT has imposed itself on the educational systems because of the fundamental changes, which occur in different relationships, concepts, and lifestyles According to (Goodwin ,2012), the development of interactive technology introduced a new generation of educational tools, which have been praised as revolutionary devices that hold great potentials for the transformation of the Normal learning environments. Curriculum is one of the fundamental pillars of the educational process that must respond to this variable, where the curriculum is the core of the educational process through which the road map is drawn to reach the objectives of the educational process.

ICT development has re-formed the mechanisms to deal with the different levels of objectives and ways of dealing with them (Noss & Pachler, 1999), (Leach & Moon, 2000). ICT should also contribute to facilitate the access to these goals.
(Cook and Finlayson, 1999) indicated that the increased use of ICT in the community provided students with opportunities to gain experience that will encourage them on learning. The current generation of students do not believe in the limits of simple learning; their curiosity is wide and cannot be met with earlier-designed educational systems. If keep using Normal methods to educate our children, we will deprive them of their future. Since our old educational system lacks the ability to take a chance in this century, we must use digitization in our educational system.

The curriculum consists of many elements: plans, equipment, facilities and extremely diverse methods, and it shall not be possible to keep such elements without being developed. Moreover, these elements must be continuously evaluated. After these stages are completed, we will be having the development, which is the process of education that cannot be conducted without an evaluation of all its elements (Machekhina, 2017)..

It is also necessary to evaluate each of the plans, textbooks, and methods of teaching, teaching methods, tests, and teacher training. All of these elements need constant evaluation and continuous development to achieve the objectives of the educational process.

In today's educational society, using technology in classrooms is vital. Students are required to use technology throughout the Common Core State Standards, which encourage students to think in a different manner than before. These standards expect students to identify how, when, and why to use technology to enhance their education.

As result of using technology in education, we get digitization of education (Digitization) which has become a trend in terms of reformation and modernization of global education environment. Digitization means the transformation of all information types (texts, sounds, visuals, videos, and other data from various sources) into the digital language. (Machekhina, 2017). It does not only mean the digitization of Normal instruction materials; however, using digital media in education will result in completely new areas of communication, cooperation, and networking.

Since digital instruction is not restricted by time and place, it is characterized by being more flexible, more individualized, and more mobile than Normal forms of learning. In the digital era, course materials are created, shared with others, and developed together in the cloud. With digital instruction, students learn at an early age to accept greater personal responsibility while also improve communication and teamwork.

Teaching science depends on methods that lead to the student's understanding of the theoretical lectures, besides scientific experiments that take place in the labs. There has been a great development in the methods of education in the present day, and efforts are focused on trying to break the accepted pattern of education from ancient times.
(Akinoglu, O., Tandogan, and R. 2007).

It is well known that each subject has a different method of teaching and approach. Scientific materials depend on thinking and solving issues, and the chemistry of applied science; therefore, the best way to teach such issues need to be based on scientific activity, and a sequence in convincing the student information, i.e. to recognize who has discovered this method in his experiment.
Successful methods in teaching science include: (Larsson, J. 2001)

- **The method of the lecture**: To follow this method, the teacher must prepare himself/herself well, arrange the ideas and sentences that will be used, and distribute the ideas fairly and equally on the time of the quota course. This shall be conducted when the teacher has a deep knowledge of the scientific material of the lesson, and indirect questions that stimulate the student's thinking.
- **The method of discussion and dialogue**: It is an indispensable method in the teaching of all sciences. Usually, it is followed when a teacher asks a set of short questions whose answers are short. Luckily, this method may suit all students at different levels.
- **Scientific presentation**: A technique, which involves presenting teaching, aids where the teacher’s role is focused on the student, and aims at delivering certain educational purposes to the student. It can be conducted inside or outside the classroom, and it will affect the student's audiovisual memory. Some students may understand better than listening, others need to be aware of the lesson more clearly.
- **Discovery is a favorite method for science teachers**. This method is about forming relationships between concepts that the teachers knows. The teacher

constructs and analyzes them to reach new information. This discovery can be of two kinds, the student's adoption, or the teacher's direction.

These methods are designed to teach students science subject taking into account students' different levels; therefore, each method includes several ideas that suit all students, whether they excel or less.

1.2. Statement of the Problem

The Palestinian Ministry of Education and Higher Education exerts great efforts to improve the quality of its education and confirm the importance of the educational process in the education system as a basis for the other jobs. Using ICT has had positive effects in improving the quality of the educational process, making positive integration changes in education and especially the educational process, as well as the progress made in integrating and adopting them as a means of improving the quality of the educational process.

The impact of ICT used to improve the quality of the learning process has become particularly important; with the degree of its use and integration without overlooking the most important obstacles, that is not completing the mission positively. To a certain extent, the success of any educational system depends mainly on the implementation of quality assurance terms of education roles and outcomes, which yield qualified students quantitative and qualitative, and satisfied the market need requirements.

In this sense, the problem of the study can be summed up in the following main question: ***What is the role of using Digitization in the quality of education standards for the 6th grades in Palestine?***

Sub-question

Several main questions arose from the main question:

- What is the role of using digitization on the achievement of sixth graders in the unit of the human organs?

- What is the role of use digitization on the motivation of sixth grade students on learning science?
- What are the attitudes of science teachers of the 6th grade in Bethlehem towards the use of digitization as an educational instrument?

1.3. Significance of the study:

Based on the importance of the variables, digitization and quality of the educational process have emerged and divided the importance of the study as follows:
This study will help to Identification of the study's variables is defined in depth, and includes various points described separately. After that, it will be concerned with the knowledge of the impact of digitization on the quality of the educational process, explanation of the patterns of use, and evaluation of each style accurately.

This study will help to identify the reality of using digitization in the Palestinian schools, and learn the impact of the interaction on the improvement of the quality of the educational process on the various elements after the real and actual use. It also aims at identifying the obstacles that prevent the effective use of ICT in the educational process.

1.4. Hypotheses of the study:

The following hypotheses proposed in this study:
H1: Digitization reveals better positive effects on achievements than Normal teaching does.
H2: Digitization reveals better positive effects on educational learning objectives than Normal teaching does.
H3: Digitization shows better positive effects on learning motivation.
H4: Learning motivation presents significantly positive effects on learning outcome for Digitization students.

1.5. Objectives:

The main objective of this study is to identify the impact of the using ICT to improve the quality of the educational process with its various components on the one hand, and to specify the obstacles that prevent the effective use of ICT, on the other hand.

This can be achieved through the following sub-objectives:

- Identify the reality of using of ICT elements in the educational process.
- Identify the impact of digitization on the quality of the educational process in general and on each component in particular.
- Identify obstacles of using digitization in the learning process that stands.
- An obstacle to effective use, and thus not to improve the quality of the educational process in its various components.
- Identify the difference in using ICT elements and their impact on improving the quality of the educational process relative to the personal information (general) of all the participants in the interactive educational process.
- Promote using digitization, especially in primary schools including widespread availability of access devices, and connectivity to the Internet
- Ensure the availability of on-line quality content through access devices both in the private sector and by SITEs.
- Enable students to acquire skills needed for the digital world for higher studies and gainful employment.

This shall transform the classroom environment from teacher-centered to student-centered learning

1.6. De-Limitations of the Study

This study has the following de-limitations:

- Locative limitation: The study covered only schools in Bethlehem District.

- Temporal limitation: The study carried out in the second semester of the scholastic year 2018 -2019.
- Human Limitation: This study consisted of all Digitalization teachers (male/female) at government schools whose teaching science; also, this study applied only on sixth graders at government schools.
- Conceptual Limitation: The study is limited to the concepts and definitions previously mentioned in it.

1.7. Research Model

According to the reviewed literature and previous studies, research limitations, the following is the model, which developed by the researcher to examine its relationships according to the research hypotheses:

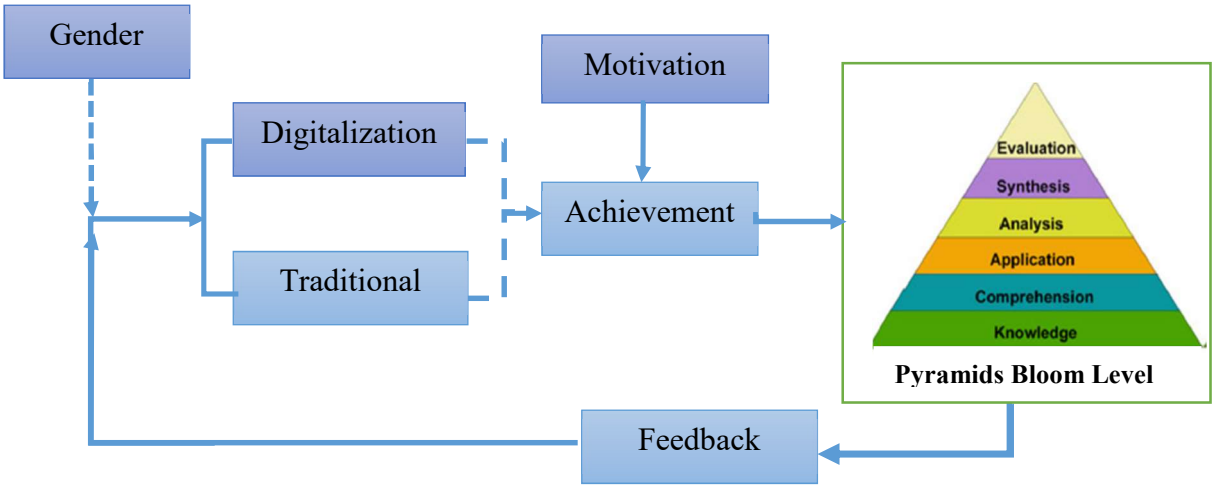

Figure 1 Research Model (Developed by the researcher)

The research framework depicts three variables. The independent variables include the method of teaching (Digitalization and Normal) and gender. The dependent variables are Taxonomy Bloom levels. The moderator variable is motivation levels. The framework that presented in this study has a strong contingent effect on the relationships between the independent and dependent variables. The role of using the digitizing on learning will be identified by measuring achievements more details on (chapter three).

1.8. Definitions:

Digitization:	It is a powerful trend in terms of reformation and modernization of global education environment. Digitization means transformation of all information types (texts, sounds, visuals, videos, and other data from various sources) into the digital language.
Digital curriculum:	A form of e learning and a set of educational and scientific experiences provided to the learner through the enormous potentials offered by ICT. It is a new form of communication between the knowledge of the expert and the learner. Information network or other digital medium such as CDs.
Attitude:	According to (Ajzen, 2005), attitude is a hypothetical construct that is in accessible to direct observation and must be inferred from measurable responses. The researcher conducted a tool to measure student's attitudes toward EFL, especially for this study.
Effectiveness:	"An output of specific review/analyses that measure the quality of the achievement of a specific educational goal, or the degree to which a higher education institution can be expected to achieve specific requirements" (Vlăsceanu, Grünberg, & Pârlea, 2004, p. 36)
Motivation:	"It refers to reasons that underlie behavior that is characterized by willingness and volition. Intrinsic motivation is animated by personal enjoyment, interest, or pleasure, whereas extrinsic motivation is governed by reinforcement contingencies. Motivation involves a constellation of closely related beliefs, perceptions, values, interests, and actions" (Lai, 2011, p. 2).
Academic achievement:	"It refers to a student's performance in academic areas, such as reading, language arts, math, science, and history as measured by achievement tests. Additionally, academic achievement depends on a child's circumstances and situations, the quality of schools and teachers, and many other factors"(Cunningham, 2012, p. 1)

CHAPTER TWO:

Literature Reviews and Theory

2.1. Education and Educational Technology

The word education comes from the Latin word e-ducere, which means, “to lead out” (Etymonline.com, 2011). However, it is indeed, difficult to define education. Education is a relentless process of becoming. We educate human being, and train animal. In the broadest sense, education is any act or experience that has a formative effect on an individual’s mind, character, or physical ability. However, in its technical sense, education is a process by which a society deliberately transmits its accumulated knowledge, skills, and values from one generation to another.

Procedural definition: Education is the method used by the educator to communicate knowledge to the learner, and this process takes place in designated settings, both formal and informal.

The origin of the word technology is a derivative of the English word technology, and it can be called learning techniques that are synonymous with the term Learning Technology. It is an organized systematic process to improve humans’ education based on managing their interaction with diverse educational resources from educational resources, educational devices, and machines to solve educational problems and achieve specific goals (Robinson, Rhonda; Molenda, Michael; Rezabek, Landra, 2016).

As others have defined it: It is an integrated system that includes a set of interactive elements of hardware, software and processes, which aims at achieving the desired educational goals effectively and efficiently. (Ammar, Qabbani, 2011)

Procedural definition: A system that integrates devices, networks, and technical software, and used to improve the teaching and learning process.

2.2. Information and Communications Technology (ICT) in Education

is the mode of education that use information and communications technology to support, enhance, and optimize the delivery of information.

2.2.1. ICT

There were many definitions of this concept, some of which were proportional to the time during which the definition arose. United Nations (1999) states that ICT includes Internet services, telecommunications equipment and services, IT equipment and services, media, radio, libraries, documentation centers, commercial information servers, network-based information services, etc., which also are related to information and communication activities (Noor-ul-Amin, 2013a).

However, some other definitions explain the modern ICT concept and the information processes it contains. For example, UNESCO (Meleisea, E. 2007) considered ICT to be one of the forms of technology that can be used in information processing, processing, storage, transport, presentation, sharing and exchange by various technical means. This technology includes not only Normal technical tools, such as radio and television, but also modern devices, such as cell phones, computers, networks, software, and satellite systems and other modern means and technologies, in addition to other related services and applications such as Video-conferencing.

2.2.2. Advantages and Disadvantages of using ICT in education

Digital technologies have a profound impact on economies and societies, how they work, connect, engage in social activities, enjoy and play, and would lead innovation in many different areas of life. Not surprisingly, there is a very strong relationship between the growing skills of education and the use of digital technology in various areas of life (Peña-López, 2016). The importance of integrating ICT in education and learning is therefore

important, but the advantages of application are parallel to some of the negative impacts and barriers to the overall and proper application of the integration process.

2.2.2.1. Advantages of integrating ICT into Education:

Improving the teaching and learning process

ICT education has influenced teaching, learning, and scientific research processes, where the impact of ICT has been demonstrated by the following elements:
(Bello, Oludele and Ademiluyi, 2018)

- **Curriculum**: It gives a strong support for contemporary skills-based approaches, especially the skill of generating knowledge, not just its transfer, performance-based curriculum, and the greater interest in how information is used, not only content (Oliver, 2008). It also provides appropriate alternatives and diverse sources of difficult areas in the curriculum, so that the computer became a cognitive tool and not just a display device.
- **Teacher**: By using ICT tools, teachers have been trained on collaborative projects and change strategies, which would reflect their positive ability to design effective and meaningful learning experiences linked to practical practice (Noor-ul-Amin, 2013). It would lead to a stimulating, active, and collaborative learning environment.
- **Teaching strategies**: The flexible timeframe provided by the integration of curricula with ICT has helped to increase the interaction of learners with information. At first, this has called for an attempt to understand themselves and to try to communicate with others to exchange experiences around them. In turn, this eventually has led to the emergence of new scenarios and teaching methods ranging from Self-learning and collaboration, such as play-based learning, inquiry-based learning, project-based learning, flipped classroom, and other learning methods that were ICT as its catalysts.
- **Student**: ICT has helped to increase students' motivation to learn and enjoy learning based on self-inquiry, problem solving, and creativity. This has led to a growing acquisition of the skills they would need in the future, especially 21st century skills, such as self-learning, self-assessment, and communication. According to UNESCO

(2007), using Web 2.0 tools, such as Skype, blogs, and forums to gain information and establish a network of relationships with other learners, teachers, schools, material experts, and other communities is one aspect of professional development.

Improving the quality and accessibility of education:

ICT allows learners to access information, and thus be able to teach and learn whenever and wherever they wish to do so. It is also considered as the best applied practical practices, which have also removed many of the constraints faced by learners, especially those with special needs, disadvantaged, and poor groups (Bhattacharya and Sharma , 2007), whose education is the most important means for social, economic and possibly political mobility to overcome economic, social, and linguistic barriers and time and space barriers. ICT has helped to reduce digital discrimination and has helped governments in poor developing countries to mitigate the economic implications of education, especially the need to provide costly infrastructure, educational facilities and enough teachers, thereby contributing to the high dropout rate of learners (Unesco, 2002), which is one of the biggest problems facing the educational process in developing countries

Improving learning environment:

ICTs change teaching and learning processes by adding vital elements to learning environments, including: (Noor-Ul-Amin, 2013b)

- They provide virtual environments and simulation systems that have supported the credibility and reliability of the learning process, especially when dealing with complex and difficult parts. Distance learning applications also provide continuous communication between the learner and the teacher inside and outside the classroom, which allows the teacher to use live streaming of videos online, and enables students to comment on a specific minute during the broadcast. It allows them to publish their projects and discussions in the form of videos and feedback.
- The multiplicity of sources of knowledge, especially those based on the web and multimedia, and the variety of skills required and intended for the learning environment into an active, stimulating environment based on open ends of learning rather than mere information transfer.

- To consider the learners' individual differences so that the scientific content, the media used, and the tasks required correspond to learners' needs and accompanied with appropriate feedback.
- Availability and diversity of learning methods ranging from traditional to creative, individual and collaborative, with maximum use of time.

Increase learning motivation:

The integration of ICT into the learning process has contributed to increase the integration of learners by providing: (Noor-ul-Amin, 2013a)

- The curriculum shifts from content-centered to competency-based approaches to the knowledge society.
- The transference of learning experiences into realistic, scalable practices that prepare learners for the job market.
- Replace the Normal teaching style with another interactive and interesting one that considers learners as partners in the formation and exploration of knowledge. This is conducted through the multiplicity of knowledge resources, knowledge tools, and media provided by ICT, such as interactive video and radio, based on sound effects, songs, dramas and comedies, television and multimedia programs. These programs aim at combining text, sound, color animations, educational computer games, and smartphones to provide reliable content that challenges learners' thinking.
- Provide opportunities for online communication and exchange of experiences with different educational communities. The World Wide Web (WWW) offers a virtual world exhibition that offers students an opportunity to participate, and is considered as a source of inspiration for them.
- Giving students the opportunity to provide feedback to themselves and to the school community has contributed to their high level of self-responsibility and group-education (Hanafi et al., 2017).

Enhancing academic performance:

Research suggests that the proper integration of ICT into education can stimulate qualitative transformation in both content and teaching methods, which are the essence of 21st century educational reform. The study by (Kulik's, 1994) shows that, on average, the

academic achievement of students using ICT is higher than those who do not. They also take less time to learn and show a strong and positive connection to their classes. The study by (Wößmann, 2004), that uses the international results of the PISA test, supported these findings. Some researchers have suggested that by using ICT, learners increase the motivation of their learning, increase the time spent learning outside the classroom, and thus increase their academic level with a marked growth of self-learning skills and communication skills (Bello, Oludele and Ademiluyi, 2018)

2.2.2.2. Disadvantage of using ICT:

Despite the many advantages of using technology in education However, some drawbacks must treated properly such as: (Bello, Oludele and Ademiluyi, 2018)

- Students do not acquire arithmetic skills because they depend the electronic calculator.
- Lack of basic literacy skills due to reliance on computer applications, such as grammar check and Microsoft word processing.
- Students' shift to focus on technology rather than scientific content, with sites such as Facebook, Twitter, YouTube, Instagram and other social networking sites would turn into distractions for learning time.
- Moral decay, which makes it to access inappropriate and harmful materials online.
- The blurring of the community's cultural identity and the replacement of real social networks and real citizenship with virtual ones, which affects the idea of social capital.
- Loss of privacy and leakage of private files over the Internet through spyware and hackers, especially for young people who are not embarrassed to send their own pictures or texts written without protection, via mobile phones, or send sexual content (Roblyer, 2016), which exposes them to blackmail and threats.
- Internet addiction, excessive use of technology and social networking platforms can lead to risks of exposure to certain social, psychological, and organic diseases. An example of the risks associated with the use of social networks is Cyberbullying, which occurs when a child or adolescent is threatened, humiliated, verbally abused, sexually assaulted, and embarrassed by another online child, adolescent, or teenager, and by digital interaction sites (Kim et al. 2018). In a study conducted by (Juvonen and Goss, 2008) on 1,450 students aged between 12 and 17, 77% of the sample was found to have had at least one incident of cyber bullying.

- Examples of the misuse of technology are digital drugs (i-Dosing), which represent listening to strange passages of music with certain frequencies that cause excretion of stimulants that cause a false sense of ecstasy and lead to addiction to listening (Roblyer, 2016).
- The thefts of scientific articles and research across websites, and the spread of (cut and paste) culture without the existence of real learning or reliable research.
- Use illegal software and applications.

2.2.3. ICT integration barriers in education:

Using ICT in the teaching and learning process is not limited to accompanying challenges, some of which can be monitored in the following areas (Sherman and Howard, 2012):

First-Order Barriers:

- Lack of equipment, devices, and resources.
- **Lack of support**: Support divided into two categories: technical support that tackles hardware failures, which cause a lot of frustration for teachers, administrative support, and decision support.
- **Lack of funding**: Purchases and maintenance of hardware, networks, high-speed Internet, utilities, and training programs require large budgets that may transform the economic conditions of some countries without providing them. On the family level, the provision of computers and Internet segments outside the classroom is an obstacle to the wider use and integration of ICT.
- **Environmental-spatial limitations**: Rooms' size, the available space, and the lack of adequate infrastructure of electrical connections and the Internet are major obstacles to the employment of technology. (In one study conducted in Jordan, and another in Greece: it was observed that the reason for the inadequacy of the IT premises was because they were not originally intended, but were constructed as regular classrooms (Ihmeideh, 2009)
- **Classroom Status**: The high number of students in the classroom drains effort and considerable time from the teacher in the management and control of students' access to computers.
- Lack of appropriate educational programs.

- **General principles of administrative curricula and systems**: The teacher may encounter a lack of clear instructions on the legitimacy of using some programs and applications inside or outside the classroom. The general line of some curricula, such as the Egyptian curriculum, continues to devote laboratory activities as major learning activities without clearly planned activities for the integrating ICT. This would leave the teacher with administrative accountability when he/she is not committed to implementing curriculum approaches and activities. This also leads to another constraint, which is the lack of time allocated to prepare, review, and follow up the implementation of learning activities that integrate ICT.

Second -Order Barriers:

It includes:

- **Teachers' attitudes and educational convictions**: Plumb and Kautz (2016). Many teachers express their reservations about the widespread use of ICT in education for several reasons. Teachers state that ICT supports isolationism and individualism among learners, poses a threat to traditional childhood practices (Lindahl and Folkesson, 2012). Young children do not have the social, motor, and cognitive skills that mature them to use IT. Some teachers also tend to Normal teaching patterns of IT usage over time, effort, and commitment.
- Lack of knowledge and skills for the proper integration of ICT into education (Edwards, 2005).
- Lack of training.
- Teachers' lack of confidence in their ability to employ technology in education.

2.2.4. ICT Integration Models in Teaching and Learning:

Researchers have developed many academic trends in an attempt to present different ways to overcome the second-degree barriers to ICT integration in education, including three barriers that are often used in schools and professional development settings. The three different perspectives on the effective application of technology in education are Diffusion innovation, TPACK, and SAMR.

While the Creative Publishing Model provides an opportunity to introduce the effective use of digital technology across social systems, the TPACK model draws attention to the forms of knowledge that individual teachers need to effectively integrate digital techniques into their practice (Mishra & Koehler, 2006). At the same time, the SAMR model is a framework that considers the effectiveness of using Digital technology in various classroom activities (Buckenmeyer, 2008).

It can be said that many countries, including Palestine, and most of the Arab and developing countries, have not gone beyond the boundaries of applying the Normal e learning, which deals with the computer as a tool to display supportive materials of the learning process, instead of considering it as a source of knowledge and a tool of knowledge. It helps students in developing self-learning and forming skills of the stage Knowledge.

This is conducted either deliberately because of the economic problems that prevent the recruitment and training of newer forms of communication technology, the establishment of the necessary infrastructure for implementation, or the lack of academic and professional awareness of the ICT's important role in shaping the identity in the 21st century. It might be the result of community's fear of cultural change, begins by fearing parents, through teachers, and ended with planners and decision makers (Henriksen, Mishra, Fisser. 2016). This creates latent societal reluctance that hampers the integration process even if equipment, facilities, and facilities are available.

ICT can be effectively integrated with education only with the community as a whole. This might be performed based on the belief in the effective role of technology in teaching and learning, and the need to be convinced that the application of technology will not lead to any disruptions in the curriculum, achievement of educational outputs, or cultural identity. Then, it will be followed by the construction of a trained trainee who is capable of and believes in the importance of change in the context of a changing global society. Consequently, this will redefine all the old educational foundations, and then builds curricula based on the development of competencies that suit the 21st century skills, such as Critical Thinking - Collaboration - Creativity - and the belief that integrating ICT provides the right environment to meet these aspirations.

2.3. Curriculum development

Curriculum, the textbook, is the process of translating the proposed educational, psychological, technical, and material specifications into an educational document that is accessible to teachers and learners. It takes into account, specific developments, and employs of suitable development models and procedures. (UNESCO. 2012)

2.3.1. The concept of the curriculum and the factors of its development

The curriculum concept is one of the concepts that need to identified and clarified. In the traditional concept, the curriculum equals the decision and the textbook, and this means that he/she cares about the learner's cognitive aspect and neglects the other important aspects, such as trends, needs, and skills and so on.

Undoubtedly, several factors call for the development of the curriculum in the Normal sense and the development of a new concept of the curriculum. (Irfan, 2008) noted that the factors of the development of the curriculum for learners are not based on cognitive aspects only, but are also based on multiple aspects of knowledge, social, individual, etc., and the nature of society. The society of yesterday is not as social, economic, cultural, or political, which resembles today's society because everything is changing.

As for the society to successfully cope with these changes there must be a good preparation for its members commensurate with these changes and challenges, in addition to other perceptions that fit the society and its nature and challenges. It should be noted that these factors are changing the era in various fields, such as development in the means of communication and globalization, and the information and technological revolution.

Faraj (2007) indicated several factors that called for the development of curricula. These factors included the rapid development in the cultural, economic, and technical levels, daily life styles, means of living, transportation, communication, urban expansion, the increasing preparation of students, the preparation of graduates from higher education institutions. Additionally, there are different global (external) factors, such as economic revolutions, knowledge, social and globalization and the revolution of information and communication.

These revolutions reached every bug and the impact of all the regions until the whole world became a small village, along with the increase of manpower in the field of services, and the emergence of world trade. All of these variables call us to be well prepared to deal with, benefit from them, and reduce the impact and seriousness, which requires reconsideration of the educational system and development.

Because of the evolution, which has led to a change in the perception of the nature of the society and knowledge, the concept of the curriculum, which is at the heart of the educational process, had to evolve. (Irfan, 2008) defined the concept of the modern curriculum as "all the educational experiences that the school prepares for students inside and outside the school to help them grow comprehensive in all respects, and modify their behavior according to their educational objectives".

The introduction of the modern concept of the curriculum has led to a change in the roles and characteristics of the actors in the curriculum. These changes included changes in goals, content, activities, methods, and methods of teaching, assessment methods, as well as the roles of those involved in the educational process, such as learners, teachers, and others.

2.3.2. The foundations of curriculum development based on the technology of education

In terms of design and components of the curriculum, the technological bases should be considered systematically. In addition, the technological spirit should be applied in the selection of the content objectives, contents, the teaching experience required by the curriculum, the introduction of technology in the teaching processes, the teaching material of the curriculum, and the introduction of technology in the processes of evaluating the different educational curricula, through researching in several references and theoretical frameworks, the researcher found that the foundations of curriculum development based on technology could be as follows: (Al-Khawaldeh, 2004)

1. Clarity of the new objectives and trends of the curricula.
2. The holistic approach to the curriculum.
3. The consideration of the collaborative teamwork.
4. The process, flexibility, and availability at anytime and anywhere.

5. Follow the accelerated development in the scientific and technological revolution, and discuss ways to benefit from it.
6. The development process aims at developing many aspects of the learner, such as the ability to creativity, problem-solving skills, critical thinking, and so on.
7. The process of development must be based on science.
8. Agreement with the trends, objectives and the educational policy in the state, and not deviate from it.
9. The process of development is based on learners' needs and considers their tendencies.
10. To be linked to the development of programs of colleges of education and the preparation and rehabilitation of teachers, especially on the use and development of ICT, and well prepare them the right preparation in different disciplines.
11. Ensure the availability of material resources to provide development requirements and the accompanying requirements for training and support technical support.

2.3.3. Objectives of curriculum development from the perspective of education technology

The development of the curriculum aims at using technology education as one of the uses of technology in all areas of life, including the field of education, through the harmonious use of available resources and educational possibilities provided by scientific and technological progress and the revolution of information (Ammar, Al-Qabbani, 2011).

ICT is necessary for the development of educational systems, which include curriculum system for the design of the field of education, the huge information flow, multiplicity of knowledge vessels, the explosion of population, the heterogeneity of learners. Additionally, it includes the continuous decline in the efficiency of the educational process, and the revolution of communication, the continuous need for specialized types of human cadres to meet the requirements of the information revolution. It is vital to pay attention to the introduction of education technology into the educational process, and try to employ it in to improve the teaching and learning processes in the light of the systems theory on which we rely for the development process. As a system, curriculum corresponds the culture of innovation in our contemporary and future world, which is the perception and

understanding that provides the learner with the ability to distinguish, interpret, and compare the components of teaching material and systematic thinking. As a result, this would make the process of learning impact all types and deepen ethical values.

Moreover, under this concept, education technology is concerned with the design and development of curricula, educational experiences, and evaluation in the light of specific objectives, the problems of utilization and renewal, in addition to provide effective learning on the detection and development of thinking. After that, it renews the teaching process through the identification of teaching strategies and the description of goals. Clearly, the extent of their achievement can measured (Ammar, Al-Qabbani, 2011)

2.3.4. Methods of curriculum development based on the ICT

Based on the development of the field of education technology, the development of the curriculum takes two tracks. First, developing an organized plan to benefit from technological developments and the resulting tools and materials to achieve a systematic and innovative sequence of teaching and learning processes.

The second track will be using appropriate types of technology to determine the objectives of the curriculum and to arrange the educational/learning positions presented to the learners and to determine the extent of students' benefit from the educational programs in the light of assessment methods and tools that are used and managed through the technology, which helps to collect and analyze data related to the elements of the educational process. The two tracks are the interactive relationship between the human side and the theoretical side, the equipment, the software, the educational / learning materials to achieve more effective educational process (Amar, Al-Qabbani, 2011).

2.3.5. The role of ICT in the development of curriculum elements

The relevance of the curriculum concept and processes of teaching are linked to interaction and integration. Teaching is the operational means to achieve the goal of the curriculum, whose strategies must be considered during curriculum development processes.

Any follower of modern trends in the development of the curriculum finds that it has shifted from focusing on finding answers of students' questions to the process of caring about the mechanism of learning. Therefore, it can be found that students have acquired the formula of self-learning and continuous by giving the directions of scientific thinking and trends of innovative thinking in solving problems. This will be based and linked with the process of conservation and storage of information to the employment of what student learned in his/her life to solve problems, which has a great impact on the stability and consolidation of what he/she learned and increase the motivation to learn.

In the light of the components of education technology through inputs, outputs and processes, the learning environment and feedback are the same components of the curriculum. Therefore, they are an integral view of all elements of education from learner, teacher, and content, learning resources, buildings, management, objectives, activities, methods, and instruments of evaluation. When addressing curriculum development procedures within a system, these elements must be viewed comprehensively. (Tammam, 2000)

The role of education technology towards teachers

According to the above mentioned and previous reviews, the researcher notices that the teacher uses technology to enrich the learning process, which gives the student a better opportunity to learn; therefore, the teacher must be knowledgeable to be able to choose the appropriate technology for an educational position. Education, rather than technology, must be the basis to determine the effectiveness of a technology, in the sense that technology, regardless of its form, is a tool or a mean. It must be a qualitative addition to the learning situation. It is necessary to focus on not being dazzled by technology, advanced or glamorous. Rather, there is a need to focus on the educational potential and what they can add to the educational situation.

There is no doubt that development of the teacher's role leads to a change in the student's role as well. When the teacher becomes a facilitator and a mentor for students, it should be a greater responsibility over the student's shoulder, and this responsibility may be reflected in the extent of integrating the student within the learning process to enable him/her to develop higher skills, such as critical thinking and problem-solving skills. Student feel of

their responsibility and the positive role they are doing, and start to avoid dependence on receiving information from the teacher.

The role of education technology in content development

(T'aema et al., 2008) stated that the process of content development must be appropriate to learners, their interests and experiences, and then the use of symbols and tools that help them to learn. The author mentioned that a change has taken place after the Second World War on the curriculum and the use of programmed education. This was accompanied by the emergence of collective teaching. The design of the school building, and the spread of electronic tools (computer), and the process of changing the American curriculum following the launch of the Russian satellite, have all led to the emergence of new theories of learning and changed the perception of the teacher's role inside and outside the classroom.

2.3.6. Digital content:

Shifting to the digital form of content as an alternative or synonym of content in its Normal form is one of the important issues in this context. Digital content increases every minute and has been greatly expanding on the Internet. Digital content covers all practical and research areas. The digital content does not exist on the books and modern sites only, but it tackles all subjects, even ancient books and manuscripts can be found in the form of a digital form. (Sherman, 2013)

As for learning curricula, it seems that the shift towards digital form has become a more attractive and urgent option. Inflation in the different curricula makes it difficult for students and teachers to deal with the large number of paper books. It might be considered as a burden for students to carry large quantities of books to and from school. However, the option is to replace the large number of books with a computer or laptop. In this direction, a number of schools started to adopt these techniques to replace paper books where the content of the curriculum is downloaded on the student's device since the beginning of the school year. It is worth mentioning that these electronic books can be added easily at any time. Regardless of what drives schools to move this way, digital content remains one of

the most important things the ICT revolution has made to the education sector. A school's drive toward digital content may be driven by its belief in education, and the need to develop all the available materials to reach that end. (Sherman, 2013)

It is believed that relying on the technology of education, and the excessive use in the educational process, may lead to neglecting some aspects of the student's basic skills , especially in primary education stages , and because the application of digital content requires extensive studies by specialists. They need to consider this aspect from different angles and not only from the side of carrying textbooks; however, they should discuss the negative effects of digital content, whether on health or even on thinking, intelligence and others, if any.

From the above and others, the researcher thinks that the elements of the curriculum that are most affected by the technology of education are the goals, so the introduction of education technology as an entrance to curriculum development is one of the ways that helps to develop our curricula well.

2.3.6.1. Steps of curricula development from the perspective of the technology of education

Through studying several references, and the personal knowledge of theoretical frameworks for the development of curricula, and the theoretical frameworks of the technology of education, the researcher was able to conclude the steps of developing the curriculum based on technology as follows (Sherman, 2013):

1. **The emergence of the need to develop the curriculum**: By responding to the sense of practitioners in the curriculum and sometimes by the state's top authorities and media training and guidance.
2. **Setting educational goals**: They are constructed in the light of recent global technological, environmental, philosophical, and individual characteristics, human, and material potential. Hence, teaching students to reach the desired goal will adopt the curriculum. This method is useful to determine the objectives are to be achieved and the outputs for the learning process, on these goals during student learning.

3. **Analysis of learner's characteristics**: It is necessary to analyze the learner's characteristics and answer the question: Who are the learners? This is necessary to determine what is appropriate for them in terms of geographical location, previous experiences, their academic capabilities, and types of education that fit this category.
4. Selection of courses or educational experiences and coordination between them.
5. **Learners' participation of:** It is important to focus on the need of the learner to be positive within the educational process. Technology can play a key role in enhancing students' participation through many tools that provide and stimulate their positive participation. It is a method that gives students room only to be passive in receiving information, while the use of technology in teaching may be necessary for the teacher. AAC offers students more and give them a greater role in their own learning.
6. **Establish a development plan**: A comprehensive development plan with behavioral educational objectives that define the areas and aspects of the study that will be the focus of development at each stage. It also includes the number of hours devoted to teaching each area, the nature of the school day, and the determination of teachers and their ability to use technology.
7. **Determine the appropriate teaching method and choose the technological teaching aids to achieve the objectives of the curriculum.** This stage is particularly necessary for the integration of technology into the curriculum, as the method of teaching is defined here. An appropriate method of teaching may be chosen, based on previous analyses. After selecting the method, the appropriate method by which the content will be transferred is chosen. Regarding students and curriculum, there are many educational means or aids that may be needed by the teacher or student during the study, even if some materials are produced, or the establishment of a blog or forum curriculum are delivered. This may also include the creation of channels of interaction with students, for example, a book or any material that will be used for teaching has been challenged or written.
8. **Use of means and materials**: According to the previous step, and once the means and materials have been identified, the actual use of these materials is done at this stage. It is essential that, when technology is used in the curriculum, there will be a need for technical support and alternative means in case the technology breaks down for any reason. It is always useful for the teacher to test the technology and

tools he/she intends to use in order to ensure that there is nothing that hinders it. If the teacher is planning to use and share certain technology during the class, but it does not work, this would lead to a confusion in the quota. Therefore, if the teacher wants to use the Internet or certain software, then he/she needs to ensure their functionality.

9. **Evaluation of the curriculum based on feedback**: It is one of the most important steps in the curriculum and in the learning process in general, but it is often overlooked. A good teacher is the one who constantly evaluates his/her method of teaching and a good curriculum. Therefore, although previous planning for using technology in the learning process is important, development is a continuous process. However, in the implementation stage, unexpected problems may appear, and therefore must be addressed and modified. This may require strengthening technology used by another or continuous training. A question that always needs to be asked is whether technology has achieved what is required of them in reaching the goals of the curriculum.

2.3.6.2. Obstacles to curriculum development from the vision of education technology

The process of curriculum development is not spontaneous and fast as it is a humanitarian process that can only achieved through the human interaction between all individuals. So, new values and trends advocated by the modern methodological organizations can accept. It is important to conduct practical studies about the obstacles that may face the development process to help overcome them before they affect the development plans, programs, and objectives.

One of the obstacles to curriculum development is the nature of society, and the nature of the case. The school is part of the society. The members of society accept the educational developments and their enthusiasm is not easy. For the curriculum to apply correctly there must be a cooperation between the school and the community. In the vision and message to strengthen what given to the school, developers of the curriculum need to clarify the dimensions of development and its necessity for the members of the community, and explain the objectives and benefits that come from behind.

(Al-Zobaie, Al-Janabi, 2003), stated that the problems and obstacles related to the curricula and the processes of their construction and development can be summed up as follows:

1. The generalization of the curricula and the low pace of the technological developments and the weak link to the labor market.
2. Weak and improper implementation of the curriculum due to poor qualification and quantitative deficiencies equipment and equipment.
3. Reliance on the field studies on which decisions are based.
4. Lack of a clear mechanism that links technical and vocational education and production centers.
5. Different authorities supervising technical and vocational education.
6. Lack of balance between the number of subjects, the amount of information and knowledge, the adequacy of the school time available to teach courses on the one hand, and the students' desire on this type of education on the other.

Since development is a process that focuses on all aspects of the educational process, it is worth mentioning that It is noted that the obstacles are always either financial, material or human, and when the state's budget allocated by the State to meet the burden of education is inadequate, then it is difficult to provide the necessary funds to carry out the development process in full, for it requires , And requires the preparation, and construction of modern schools, and provide provision of the latest equipment, laboratories and supplies.

This process also entails the issuance of new electronic books for students, and the preparation of teachers to practice educational techniques by enrolling offering them development courses, in addition to the presence of a layer of experts and specialists who work in the preparation, processing, evaluation, planning and writing, and thus shows that the development of the curriculum needs a lot of funds this material aspect will be one of the biggest obstacles to development.

Moreover, focus should be made on the school's leaders as it effects on the curriculum and the achievement of its objectives, also the teacher who's the tool of direct communication with students, and he/she is who is entrusted with the implementation of the curriculum, and must depend and depends on the success of development, no matter how wonderful the

layout and equipment on the image translated by the teacher in the end. The teacher's role in the transfer of development from his/her thought to the work is very important and requires the attention of the preparation of the quantitative and qualitative teacher and grantee the space for professional growth.

Based on this there should be a deep and broad attention to the process of development and planning of the curriculum deeper and broader to achieve the actual realization of the curriculum, and to make the required change in society because graduates of students are not only producers of knowledge but also creators of knowledge.

2.4. Digitization

(Saleh, Badr bin Abdullah 2002, 23) believes that the digital approach represents a new form of communication between the knowledge of the expert and the learner. Instead of the Normal approach that the learner often receives by connecting to a book and teacher, it becomes digitally connected via the Internet or through another digital medium, such as CDs.

Some authors believe that the digital curriculum is one of the concepts that have entered into e-learning, while others believe that the digital approach is the technological approach that expresses a production system, which seeks to use and apply technology and the logical operation of mental processes within the presentation, storage, analysis and recalling of information for the educational process. This can be conducted through materials and programs with pre-defined goals, using sequential steps in the learning process based on behavioral science, including behavioral learning theory and instrumental or procedural conditional learning (William Obaid, Majdi Aziz, 1999). The current research states that digital curriculum is an attempt to classify the curriculum with all its generally accepted basic elements (objectives, content, methods of teaching, assessment methods). However, others limit the concept of digital curriculum to the issue of cognitive content after being adapted to become highly effective in achieving students' self-learning concept through Computer.

In India, digital education has three components; the content, technology platforms and delivery infrastructure. Digital education needs collaboration between many governments and other institutions such community, private sectors, and experts. Digital education is an interesting issue among the staff who implement the system, and it is effective for the students. The challenge in this system is that the Indian people do not have the required internet bandwidth especially in the rural areas (Saidaiah & Ravishankar, 2108).

However, in Japan, the application of the digitization system was different. There were two types of systems, which were applied on elementary and secondary schools. Additionally, the teachers were affected by several aspects, which are mentioned in the following paragraph: (Mayumi H, 2015)

- The first model was modular learning system, which improves student's ability and concentration through brain training, testing the speed and accuracy, and retaining the information that also improves the academic ability.

- The second model was the collaborative learning support system, which focuses on the communication between the teachers and the students.

Despite the changes that may occur in the stuff of the Japanese schools, these two models used tablets and other types of devices to improve the knowledge, skills and the collaboration to solve problems.

The tests of the first system were used in this study usually in the morning, and the statistical data was obtained in two years, and the results of student's ability to concentrate and retain information was improved. The relationship between the academic ability in mathematics, Japanese language, English language and the concentration or retention was highly correlated; however, the social/natural academic ability was not strongly correlated with concentration because students were not interested in these subjects (Mayumi H, 2015).

The second system is the collaborative system learning support, which focused on learning and communication. In the classroom, the students answered the questions on a tablet or other device, and then they shared their answers by using an electronic white board.

The observation was conducted by using this system with regard to the accessibility to correctly answer in these subjects; Society, Mathematics, English, Arts, Science, Music and Moral. Teachers' notes included the facts that the capacity of thinking and students' participation were increased, and the awareness of different ideas and opinions was increased as resulted of more cooperation.

Teachers were affected positively by using this system. First, they can collect all opinions from all students in the classroom. After sharing the students' opinion, the communication between teachers and students themselves accelerated. Second, students themselves studied the problems and expressed their opinions more than before by the use of the collaborative educational support system (Mayumi H, 2015).

2.4.1. Digitization of curriculum

In the current research, it is intended to transform information, scientific concepts, generalizations, theories, laws, texts, forms, sounds, experiments and other components of the science curriculum into zero and one string (according to the binary system on which computers and information systems operate). Additionally, digitization includes advanced streaming techniques that streamline visual and audio information in direct communication, so that they integrated immediately into the services provided, which benefit both the digital medium and Learner curriculum (Nabil Ali, Nadia Hijazi, 2005.134).

Global movements for the beginning of electronic courses

1. **Forum and the development of education e-learning technology :**
   Founded by the CEO in 1996, the CEO Forum on Education and Technology is a unique partnership between education leaders and partners interested in measuring and monitoring progress towards the integration of ICT innovations in educational institutions.
2. EISD plans to support courses with technological innovations, which focused from the outset on issues of integrating electronic courses with technology in classrooms, **and have dealt with them through three main objectives are as follows:**

- Provide enough technical support and training for faculty members and students to support the initial efforts of ICT.
- Provide a good entrance to the employment of computers with courses, in addition to their applications and implementation of education based on the diverse technological resources of the faculty and students.
- Emphasize the integrated methods of education within the classroom to employ the best educational methods with groups of students

2.5. Digitization on Palestine

The Ministry of Education is one of the most important governmental institutions in the Palestinian National Authority (PNA). It is the institution that has the greatest role in building the personality of the generations, from acceptance of the children in kindergartens, the transition to basic and secondary education, and moving on to the university. The education system is necessary to build an independent and conscious personality that contributes to the building of society in all its aspects, whether economic, social, or political. Therefore, it is important to focus on the rules and regulations set by the Ministry of Education, as well as to introduce appropriate new policies for the great development of technology for different lifestyles (MOE, 2017).

Consequently, the Ministry of Education in Palestine applies the process of digitization to improve the quality of education, to activate self-learning, and to overcome the routine in the educational process, so the change in the educational process becomes more effective when the process is transferred transferring from the teacher to the student through the application of digitization.

In Palestine, there are many technological tools in schools, such as (computers, interactive boards, LCD projectors, etc.), and they are used as explanation tools to improve students' comprehension and understanding. Appendix(1)

After reviewing the Japanese experiment and the experiments of other countries regarding digitization of education. In September 2015, a formal decision was made by the Palestinian Council of Ministers regarding the digitization of the educational system as a

national project led by the Ministry of Education under the responsibility of Minister Dr. Sabra Saydam, and with the cooperation of the government and private Palestinian sectors.

In July 2016, a Palestinian staff consisting of employees and engineers from the Ministry of Education attended a workshop, which was under the assistance of directors and supervisors from Intel Semiconductor manufacturing company, Microsoft Corporation Technology Company. The workshop was held in Jordan to review and benefit from the digitization of educational experiments in other countries, and to suggest that a digitization of educational system be implemented in Palestinian schools. In September 2016, the municipalities with the Ministry of Local Government, Paltel Company, Amideast, Coca-Cola Company, and other donors started to present financial tender to prepare the pilot schools for the new system.

The system started to be implemented on pilot schools on the fifth and sixth grades, classes of thirty-seven students, and in government schools, which had the digitalized structure in the second and first semesters in the year 2017 after the teachers had been trained.
A national team for digitization of education in Palestine consisting of specialized engineers and supervisors from the Ministry of Education was created for this mission. The team was responsible to train teachers to improve the technological capabilities. The training was divided into technical, educational, and classroom management training.

In addition, the team was responsible to follow up the system's infrastructure internet network. It was its responsibility to provide digital content of the Palestinian curriculum, and show the mechanism that can be used by teachers to benefit from the Palestinian education portal, which contains thousands of learning blocks, videos, and educational materials, which are easily accessible to teachers.

The Palestinian digitization system consists of the following devices (Each of these devices has special features):

1. Charging and storage unit.
2. Educational 2-in-1 Detachable Tablets PC.
3. Interactive Projectors.
4. 2-in-1 Detachable Teacher Notebook.
5. Mobile Server.

6. Access point (the needed access point was content access point which Israeli authority refused to pass it from the boarders.

2.5.1. Plan of the Ministry of Education in Palestine in digitization

Through the researcher's knowledge of several future for the development of education in Palestine, the researcher noticed that most of them focused on the role of technology and the need to employ them in educational work, including:

1. Integrating technology into education fully.
2. E-learning program.
3. Program for the development of creative thinking and talent.

2.5.1.1. ICT Sector

The development of telecommunications, digitization, and information technology enabled several poor countries to overcome costly infrastructure investments, and allowed them to improve education services at effective costs. The Ministry of Education moves towards digitization education to make milestone change in the educational process. It intends to employ technology for the service of education based on four components. Three of these components depend on the infrastructure of communications and information technology as well as technology equipment (internet, portals, and computers). The fourth component is teachers' training and rehabilitation.

2.5.1.2. Development of e-learning programs.

Relevant interventions of the Education Sector Plan 2017-2022 include the following: (MOE, 2017)

- Increase the rate if using education and learning technology in the education process beginning with the classrooms. It also includes the library, science lab, computer lab, and other teaching methods and means/teacher, etc.
- Promote the use of modern tools and equipment, such as interactive projectors at schools.
- Expand and encourage the digitization of education.

- Improve the process of e learning and distance learning.

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2.5.2. Obstacles facing the plan

The most prominent obstacles that face the achievement of the abovementioned to goals mentioned above are the fact that the Israeli occupation withholds electronic equipment and tools (sometimes for long periods). Israel has full control over imports and exports, and since the above-mentioned equipment and tools are donated or imported from abroad, it becomes a major obstacle to achieve them. Moreover, the second obstacle is represented in the budgets earmarked for development of the e-learning programs; these budgets are insufficient to popularize the initiative of digitization of education. Therefore, the Ministry will endeavor to mobilize funding for this initiative through other sources, such as municipalities and donor countries.

The Ministry supports and encourages industrialization especially in the technical and digital fields, in addition to the reinforcement of the digital content. It also boosts digitization of education at various levels. To achieve these goals, the Ministry provides: all schools with free access to the internet (under an agreement with the Ministry of Telecommunication); reinforces digitization of the educational content through an educational portal which can be accessed by all schools, teachers and students; and provides schools with enough computers and tablets containing the Palestinian curriculum. Learning through these tablets is currently being experimented at two basic schools in each of the directorates of education (grades 5-6), where implementation will be gradually expanded on later stages.

2.6. Motivation

brilliance is not the only determinant of the achievement. High motivation and engagement in learning have consistently been linked to reduced withdrawal rates and increased levels of student's accommodation. The evolution of academic essential motivation in children is an important goal for education process since its inherent importance for future motivation, as well as for children's effective school elaborate (Gottfried, 1990). In any school environment, whether elementary, secondary, even higher education, the student's motivation for learning is generally regarded as one of the most serious determinants, if not the premier determinant, of the success and quality of any learning outcome (Mitchell,

1992), Inspecting the construct of effective motivation in children at the elementary schools is important because academic intrinsic motivation in the early elementary years may have profound implications for initial and future school success (Gottfried, 1990). Students who are more intrinsically than extrinsically motivated fare better; however, students who are not motivated to participate in learning are unlikely to succeed. the higher academic standards make it even more important to motivate even the disengaged and discouraged learners (Brewster & Fager, 2000).

Using the term "motivation", required the knowledge about aware of the limitations and problems related (Madrid, 2001):

1. We cannot directly observe a person's motivation; all we can observe is that person's behavior and the environment in which he/she acts. Motivation is something inside the individual, and it acts reciprocally with the environment. Generally, we consider it to stimulate, direct, and sustain behavior.
2. We often seek to explain why individuals behave in a specific manner, although in fact, we can only describe their behavior when they act reciprocally with their environment. After all, we can only describe individuals' behavior by the help of certain instruments of control, such as direct observation, questionnaires, interviews, reactions to certain stimuli, etc.
3. It is also worth remembering that motivation is merely one more element – and not the only one – which determines behavior. Furthermore, it is above all a question of degree, hence the fact that we often speak of "degrees of motivation..." Motivation involves several processes. In order to obtain a deeper insight into the underlying processes by means of which children begin to learn in class, we need to pay attention to certain activities more than others do, and we shall be more persistent despite distractions. Additionally, we need to conduct an extensive overview of theory and research.
4. By manipulating and controlling students' motivation in the classroom, the teacher helps in shaping the child's personality. The teacher's behavior as well as his/her way of organizing the class causes changes in the student's motivation.
5. The study of motivation begins and ends with the study of behavior. Historically, the study of motivation has been associated with internal processes, such as needs, intentions, or objectives. The apparent choice among a series of possibilities of action is an initial indicator of motivation.

It could deduce that an individual is motivated in a certain way when he/she pays attention to something to determine something else. Motivational deductions are suggested by the individual's choices between different alternatives of behavior. Choice is the designation or attribution of preference of alternatives, which suggest motivational deductions.

Two further instances of strong behavior are the return to a previously initiated activity when there is no apparent external coercion and perseverance. Observers deduce the existence of a greater or lesser degree of motivation when an individual focuses his/ her attention on the same activity for a longer or shorter span of time. In the classroom, the student's tendency to continue with an activity without getting distracted leads us to deduce that he/she is highly motivated. Many authors have termed this model as "continuous" or intrinsic motivation.

(Crookes and Sshmidt, 1991: p.480) pointed out that, "it is used more as a general catch all rather than a precise construct. They quote "motivation" is used as a general team- a dustbin- to include a number of possibly distinct concepts." Regardless of the case, it has been traditionally equated with and measured by proficiency. It is also defined as producing engagement in and persistence with the learning task. This is especially true amongst teachers rather than second language researchers, who would describe a student motivated if he/she becomes productively engaged in learning tasks and sustains that engagement, without the need for continual encouragement or direction.

(Deci and Ryan, 1985) mentioned that motivation is divided into intrinsic motivation, which is defined as the performance of an activity for its inherent satisfactions rather than for some separable consequence. Intrinsic motivation, which is defined when a person moves to act for the fun or challenge and not due to external prods, pressures, or rewards. (Crookes and Schmidt, 1991) pointed that, the three major sources of motivation learning are the learner's natural interest, the teacher as an example of extrinsic factor, and the success in the task.

(Ababio, 2013) stated that, motivation is important in the teaching and learning process for two reasons: (a) it becomes the main preoccupation of effective teachers who want their students to become interested in certain kinesthetic, intellectual, and aesthetic activities. Students also need to show corresponding demonstrable behavior, after formal teaching has

ended – that is, it emphasizes the development of students' cognitive, effective and psychomotor domains, which constitute the core purpose of teaching; (b) it serves as a medium used by results-oriented teachers to get their students acquire the requisite knowledge, understanding or skills in the teaching-learning process.

(Davies and Pears, 2000) added that any lesson should be dynamic to involve learners in varied activities and interactions. Learners should not just listen and repeat information, but they also need to be active. To participate willingly, they must feel able and confident, not threatened by failure, reprimand, or ridicule. The teacher must take the lead to establish a positive atmosphere, plan appropriate activities, encourage learners, and deal with problems sensitively. Motivation is an essential factor for learning.

Among the related theories in educational psychology, (Christophel, 1990) talked about the importance of motivation as an important element in the learning process; he then emphasizes "how" rather than" what" learners are taught. He explains that learning has been conceptualized as a process, which involves the acquisition or modification of cognitive, affective, and behavioral outcomes. Specifically, cognitive learning emphasizes comprehension and retention of knowledge; affective learning focuses on a positive or negative attitude toward the subject or teacher; and behavioral learning is the development of psychomotor skills.

2.7. Achievement:

(Carter, 2015) mentioned that, students' achievement has become a debatable topic in education today, especially with the increased accountability for classroom teachers. The ultimate goal for any teacher is to improve students' level of ability and prepare for adulthood. Defining student's achievement and factors, that affect progress is critical to becoming a successful teacher. Academic achievement or (academic) performance is the outcome of education — the extent to which a student, teacher or an institution has achieved their educational goals. Also said that, students' achievement measures the amount of academic content they learn in a determined amount of time. Each grade level has learning goals or instructional standards that are required to be taught by educators. Standards are like a 'to-do' list, which can be used to guide instruction. Students' achievement will

increase when quality instruction is used to teach instructional standards. He added that, there are many variables that can affect student's successful achievement, but the most critical are classroom instruction and learning disabilities.

It is important to remember that not all students learn the same way or at the same rate. Students are like leaves on a tree; there are no two exact same leaves. Just as a leaf comes in unique colors, shapes and sizes, each student has his/her own a unique learning style. You must use a variety of teaching methods and understand each student's background and needs. Furthermore, classroom instruction is the most important factor that affects students' achievement; however, teachers influence the quality of instruction, set expectations for learning, and measure the level of understanding. For example, when a standard is not presented in a way that a student can understand or if it were boring, it would be very difficult for a student to meet the required level of achievement.

A good teacher will use strategies, such as discussion among students, videos, or stories, to gain students' attention and support the learning process. Teachers should constantly be thinking of ways to make learning fun and appropriate. For example, looking at our commotion list, you may pre-pay for your cleaning to get a discount, or you may join a friend to make the study session more interesting. Likewise, students' achievement involves well-thought out strategies to improve the quality of learning!

A learning disability is a condition that causes a student to learn at a slower pace than other students of the same age or grade level. A learning disability can make understanding some standards more difficult, but it does not mean inability of academic achievement. It is important to remember that when it comes to students' achievement, all students can learn.

(Wong, 1998) stated that, students succeed because of a good classroom management. The most important factor, which governs students' learning, is Classroom Management. It can be defined as the teachers' practices, which govern students learning. What the teacher does in the classroom to structure and organize the learning environment is the most important factor that will increase students' achievement. It is the time to organize our schools based on what we want students to achieve. If we need to increase students' achievements, then the classroom must be organized for learning. Unfortunately, what typically happens in a classroom is the fact that a teacher does activities and then tackles problems that occur. No

time is spent on organizing or managing the classroom. Then, of course, the administrator has to contend with this problem, which typically has nothing to do with discipline added that, the only factor that increased students' achievement was the significance of a teacher. Studies have shown that teacher's preparation is one of the strongest indicators of students' achievement. Additionally, studies have shown that teacher expertise is the single most important factor in determining student achievement. Moreover, the bottom line is that there is no way to create good schools without good teachers. It is the responsibility of the administrator to create a good school, and the responsibility of the teacher to create a good classroom. Therefore, the following shall be considered when we intend to create an excellent school: (Wong 1998)

1. Teach classroom management skills and have school-wide procedures.
2. Create a school culture or family.
3. Define school goals, and religiously collect and analyze the data.
4. Have an orientation program for new teachers.

2.8. Bloom's Taxonomy of Learning

Planning is considered as teachers' main duty in the learning and teaching process (Barakat & Sabah, 2007). This includes many procedural steps that are relevant to designing educational models and writing the educational goals, which vary from general educational goals to behavioral ones (McKenney & Visscher-Voerman, 2013).

Educational scientists encourage teachers to write educational goals that stem from their interests in developing a student's way of thinking and prepare them to think creatively and which also helps them to become productive members in their societies. (Al-Sarayreh, 2011). Writing comprehensive educational goals helps teachers to choose suitable teaching methods, educational aids, educational activities, and exam assessments (Darwazeh, 2011).

Educational goal is defined as a statement that describes what the learner does after an educational experience.

It is a well-known fact that educational goals are expected from the students after the learning process, and that their behaviors will indicate their learning, and what was employed in their mental activities and thinking process (Nayef, Yaacob, & Ismail, 2013). Educators view learning process as a complete and comprehensive process of dividing educational goals into three stages; however, it was limited to particular subject areas (Christi, 2012). Whereas, Bloom's classification is more suitable because it can be used with all subjects (Seddon, 1978).

In 1956, Benjamin from Chicago University divided educational goals into three categories: cognitive, self-kinesthetic, and emotional (Darwazeh, 2001). Bloom's Taxonomy is considered one of the oldest frameworks based on educators' mental activities (the cognitive performance for the educator) and what follows these activities from mental processes, and shows the levels of goals that can be designed (Hubei, 2013). The Bloom's Taxonomy model divides knowledge into six levels as follows: knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation (Junoh et al., 2011).

1. Knowledge refers to the individual's ability to remember what he/she learnt, previous information, concepts, realties, vocabulary, names and dates (Alawneh, 2009).
2. Comprehension means learner's ability to realize what he/she had learned. A learner shall be able to explain, summarize, and interpret what he/she has learned. (Kastberg, 2003).
3. Application is the educator's ability to perform and realize what he/she has taught (Hawks, 2010).
4. The Analysis shows an educator's ability to analyze the learning material into small fragments, to know the reasons and motivations, and to link between elements. At this stage, the learner will have the ability to conclude and understand the relationship between cause and effect (Junoh et al., 2011).
5. Synthesis refers to the learner's ability to collect data and to group elements together in a different sequence. It also includes providing new solutions by developing plans and processes (Forehand, 2005).
6. Evaluation refers to the learner's ability to judge the value of anything according to a set of standards. At this stage, the learner will be able to provide a point of view and judgments, and will be able to form conclusions, provide ideas, and defend these ideas (Kastberg, 2003).

Remembering placed at the bottom of Bloom's Taxonomy, whereas assessment is positioned at the top of the Taxonomy because it is very complicated
(Barakat & Sabah, 2007).
The learner must possess a complete understanding of the bottom most levels before gradually moving to the uppermost levels within the Taxonomy. This system enables educators to diversify their educational goals (Al-Sarayreh, 2011). Given the scientific subjects, such as Mathematics provides the learner with different inductive, deductive, abstract, scientific, and creative thinking styles. (Al-Jarrah et al., 2014).

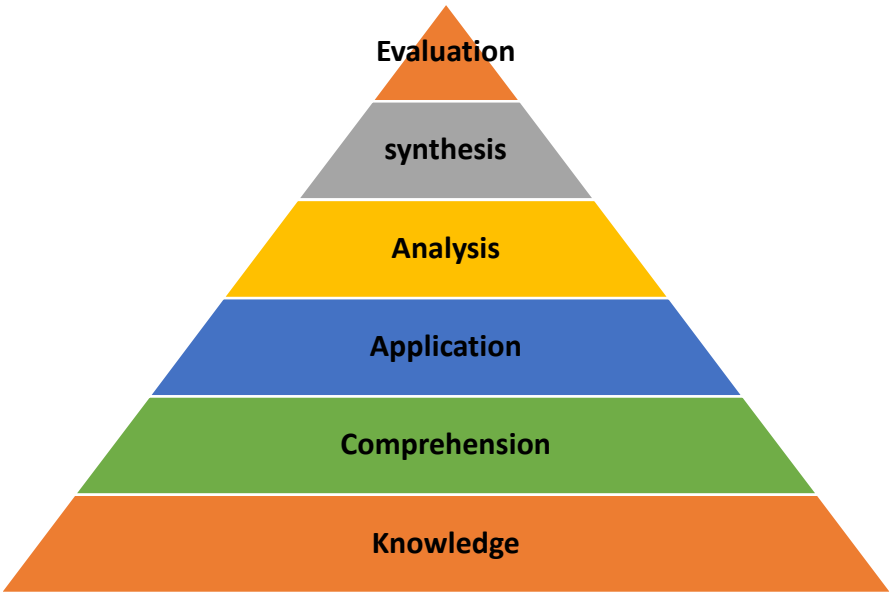

Figure 2: Bloom's Taxonomy

2.9. Competitiveness of Digitization

The OECD (2010b; 2015a) and the European Commission (EC) (2016) have recently claimed that digitization has become a driving force in economic productivity, and therefore they encourage their member states to enable the development of new business models and ICT infrastructure to secure national economic competitiveness.

Since 1990s, economic and cultural globalization has dovetailed with the global educational policy convergence that has been disseminated by large international organizations, such as the OECD and World Bank (WB).

The policy trends insist on the development of humans' capital and economic competitiveness through education. This is presented as an aim that can consolidate various public and private interests and serve the common good. (Rizvi and Lingard, 2010) This convergence has been coextensive with a transition from government to governance. This means that the administrative state now plays a receding role in policy formulation and implementation. Education policies are now increasingly devised, dispersed, and implemented in self-organizing networks that entail both local, national, and international actors, and represent both public and private interests. (Lawn and Lingard, 2002), (Lawn and Grek, 2012), (Rizvi and Lingard, 2009)

The notion of the information society – and the central role of ICT included within it – is still discernible in the strategic papers of the OECD and the EU, which envision changes in social politics, the economy, and education policies. They also highlight the need for national, regional, and local strategies of using ICT, which will mobilize a wide array of public and private stakeholders (see, e.g. OECD, 2010b).

2.10. Related studies

2.10.1. Achievement test studies

(Shatat, Aldalalah, & Ababneh, 2017). The purpose of the present study was to examine the effects of e-book of the Bloom's Taxonomy levels on students at the Emirates College of Technology (ECT) at both internal and external motivation levels. This study utilized the quasi-experimental type methodology. The independent variables were the methods, Normal, and e-book. The dependent variables were the Bloom's Taxonomy levels, which will determined by the final mark on the post-test. The moderator variables were internal and external motivation levels. The study sample consisted of (61) undergraduate students at ECT, and who were randomly selected, via simple random sample, from (127) students. ANOVA procedure used to determine the significant differences of the pre-test scores between the two methods. An analysis of covariance, ANCOVA, carried out to examine the main effects of the independent variables on the dependent variables. The study findings showed that students who have learned through the e-book method achieve design efficiently better in their post-test scores than those in the Normal method. Students at the internal motivation level perform design efficiently better in their post-test scores than those at external motivation level. The e-book method was proved to help students with external motivation in their post-test score motivation.

(Sowunmi, and Aladejana, 2013), conducted a study aimed to investigate the impact of computer-assisted teaching and simulation games on science education on primary school students in Nigeria. The study sample consisted of (150) students of first level, they were divided into three groups: a control group with (50) students, and two groups of two groups comprising each group (50) students, the first experimental group studied science using a

package of simulation games, the second experimental group studied computer science (a package of interactive skills). The researchers prepared a computational test in science. The results of the study showed that there were no statistically significant differences in student performance due to simulation games and computer aided teaching.

The study of (Owusu, Wilmot, & Monney, 2010) aimed at investigating the effectiveness of computer-assisted teaching compared to the Normal method of teaching biology for secondary school students in Ghana. The study sample consisted of two randomly chosen schools, divided into two experimental groups. This result leads that experiment group's students with computer-assisted learning methods increase their achievement level and show a higher performance more than the control group student's show.

(Uhumuavbi & Mamudu, 2009) also conducted a study aimed at revealing the effectiveness of the programmed education in science students' collection in Edo State, Nigeria. The study sample consisted of (100) students, was divided into two experimental, and control groups. The results of the study showed statistically significant differences between the average scores of the students of the experimental and control groups in favor of the experimental group studied using the method of programmed education.

(Grubišic, Stankov, Rosic, Z itko, 2009) stated that effective evaluation should be replicated at least to verify the original results, and to indicate evaluated e-learning system's advantages or disadvantages. This paper presents the methodology for conducting controlled experiment replication, as well as, results of a controlled experiment and an internal replication that investigated the effectiveness of intelligent authoring shell eXtended Tutor–Expert System (xTEx-Sys). The initial and the replicated experiment

based on our approach that combines classical two-group experimental design with factorial design. A trait that distinguishes this approach from others is the existence of arbitrary number of checkpoint-tests to determine the effectiveness in intermediate states. We call it a pre-and-post test control group experimental design with checkpoint-tests. The results revealed small or even negative effect sizes, which could explain by the fact that the xTEx-Sys's domain knowledge presentation is rather novel for students, and therefore difficult to grasp and apply in earlier phases of the experiment. In order to develop and improve the xTEx-Sys, further experiments must conduct.

(Al-Jawer, 2008), conducted a study aimed to investigate the role of the use of computer labs and simulation programs on the collection of secondary students towards chemistry, in addition to their attitudes toward computerized laboratories and computer simulation programs. The study sample consisted of (51) students and was divided into three groups, the control group, and two experimental groups, one for computer labs and the other for computer simulation. The results of the study showed that there were no statistically significant differences between the average scores of students of different groups in the achievement test. In addition, there were no statistically significant differences between the mean scores of the groups' students in the trend scale towards chemistry, and positive trends towards the use of computer labs and computer simulation programs in chemistry learning.

(Khalid, 2008), conducted a study aimed to investigate the impact of using a virtual learning environment in science education on the achievement of sixth grade students in UNRWA schools in Nablus governorate. The study sample consisted of (146) students, divided into two groups: a student learned in the Normal way, and an experimental group that learned using the virtual learning environment. The researcher used a pre-test and post-test and a

computerized program that simulates the unit of strength and movement. The results of the study showed that there were statistically significant differences in the achievement and retention in the science of the 6th graders students in the experimental group at all levels. And the absence of differences with statistical function in the achievement of the post-test in knowledge, memory, understanding, comprehension, composition and the total degree of achievement between the two groups for the experimental group.

(Al-Qarni, 2006), conducted a study aimed to investigate The role of computer simulations in the teaching of science (in the geology unit) on the achievement of scientific concepts among second median grade students in Bisha governorate in the Kingdom of Saudi Arabia. The study sample consisted of (83) students, divided into two groups: the experimental group consists of (40) students and the control group. It consists of (43) students of the second grade intermediate in Bisha governorate randomly selected, And a computer simulation program in the Geology Unit. The results of the study showed that there were statistically significant differences between the average scores of the experimental and control groups in the achievement of scientific concepts in the post-application of the achievement test at the level of (remembering, understanding, and applying) for the experimental group. There were statistically significant differences between the average scores of the experimental and control groups the achievement of scientific concepts in the post-application of the achievement test at the three levels (remembering, understanding, and applying) for the benefit of the experimental group.

(Borstorf & Lowe, 2006) conducted a study that aimed at identifying trends towards e learning and learning about learners' perceptions and their conviction for this type of education and its effectiveness. The study results indicated that (88%) of respondents

showed positive attitudes and positive experiences towards the use of e-learning, and 79% advised others to use this type of education. While the shortcomings of this type of student focused on the need for more communication with teachers and other students. Additionally, females suggested more communication with teachers and clearer usage instructions, while males and younger students asked for more contact with other students.

(Kurbanoglu, et al.., 2006) conducted a study that aimed at investigating The role of the programmed syllabus in the collection of students in the field of chromatography. The study sample consisted of (40) students in eastern Turkey. The study results showed that the experimental group, which learned how to use programmed instruction exceeded the control group which learned by using the normal method.

(Abdul Aziz, 2004) conducted a study aimed to identifying the differences in student's achievement when they use virtual classes, compared to the Normal method at the levels of knowledge, comprehension, and application in the individual classification of Bloom. As a result, there are no statistically significant differences at the level of 0.05 in the average achievement of students at the level of the first and second level of the classification of Bloom (level of memory and level of understanding). However, there are statistically significant differences at the level of 0.05 in the average achievement of students at the third level of knowledge of the classification of Bloom (application level), as well as in the average students' achievement of in the applied test.

(Akcay, et al.., 2003).A study aimed at examining The role of simulation and computer animation on students' success in chemistry and their attitudes towards chemistry. Researchers have developed computer programs to achieve this goal. The following tests

applied prior to the experiment: the achievement test, the logical reasoning ability test, the trend scale towards chemistry, the trend scale towards the computer, and the trend scale towards simulation. The study sample consisted of (48) students in the secondary stage, and whom divided into two groups. A study conducted in the computer-based method and a control studied in the Normal way. They indicated that the experimental group students' attitudes to computer, to chemistry and to simulations show a significant and positive change due to students' control groups. It is the same with their success toward chemistry.

(Chang, 2002) conducted a study to detect the role of the computer use on improving the results of science teaching. The study sample consisted of (294) students in Taiyuan. The sample members were divided into experimental and control groups. The results of the study revealed significant differences in the collection of students for the experimental group studied using the computer.

(Al-Sharhan, 2000), conducted a study aimed of to find out The role of using computer on the achievement of first secondary grade students in physics for levels of memory, understanding, and application according, to Bloom's classification. An experiment was conducted on two equal groups of students, one experimental and the other an officer, each consisting of (25) students from the city of Riyadh. The first group taught the teaching material of the physics curriculum for the first grade secondary using the computer as an experimental group, and the second group taught the same material in the Normal way. The two groups conducted both pre-test and post-tests in the subjects covered by the course. The results of the analysis of the pre-test showed no statistically significant differences, indicating that the two groups were equal. The results of the post-test analysis were as follows: There were no statistically significant differences in the first cognitive level

(memory level) between the experimental group and the control group. There were statistically significant differences in the second and third cognitive level (understanding level and level of application) between the experimental group and the control group in favor of the experimental group.

In a study by (Soyibo, K & Hudson, 2000), they aimed at finding the impact of computer-based education on students' attitudes towards biology and education by using the computer and its effect on students' understanding of the subject of reproduction in plants and animals, compared to the usual method (lecture and discussion). The study sample consisted of (77) students in the 11th grade of Jamaican in the capital Kingston. In this study, three data collection tools used the questionnaire, and the achievement test in biology, and the identification of trends towards biology. The study results showed that the students' attitudes in the experimental group on the test dimension to biology and to computer use was much better than that of students in the group the officer studied in the normal manner.

(Al-Mutairi, 1998) conducted a study aimed to find out The role of using one of the computer programs in science in the achievement of sixth grade students in Riyadh city, The study sample consisted of (60) students divided into two groups. The first group consists of (30) students studied in the Normal way (the control group), the other group consists of (30) students studied using a computer program (experimental group). After the experiment was completed, the achievement test in science applied to both groups, the results of the study were as follows: There were statistically significant differences in the average achievement of students in science between the experimental and control groups

in favor of the experimental group at the level of remembering and understanding. No statistically significant differences observed at the level of application in both groups.

2.10.2. Motivation studies

The study of (Lin, Ming-Hung et al. 2017) "A Study of the Effects of Digital Learning on Learning Motivation and Learning Outcome". The study aimed at understanding students' opinions about digital learning. In this study, students are tested, and proceeded questionnaire survey quasi-experimental research applied in this study. A total of (116) students in (4) classes are selected as the research subjects for the instructional research. The study concluded that digital learning presents better positive effects on learning motivation and learning outcome than Normal teaching.

(Milner, Powell et al, 2015) conducted a study aimed to identify the role of computerized educational programs that deal with video and communication in raising the performance of students and their motivation towards learning science. The results of the study showed that students have improved information and understanding about science using educational software.

The study of (Christensen & Knezek, 2015) use qualitative methodology and collected information through previous studies. The study found that good educational programs contribute to increase students' motivation towards science learning, and enhance the curriculum's ability to communicate good and interactive information to students. The study also concluded that the good application of such software based on teacher's capacity to apply and activate it in the classroom.

(Gonen, Kocakaya, & Inan, 2006) conducted a study aimed to investigating The role of teaching on the pattern of simulation and constructive learning on the achievement of secondary school students and their attitudes towards physics. The study sample consisted of (32) students from a private high school in the area of Diyarbakir in Turkey. They were randomly selected and divided into two groups: experimental group (16) studied (16) studied the same content according to the Normal learning method, and both groups underwent a pre-test to ascertain the equivalence of the two groups, at the end of the experiment, both groups tested the achievement in electronics. The results of the statistical analysis showed that there were statistically significant differences in the average achievement of students in the levels of knowledge and understanding and in favor of the computer teaching method. There were no statistically significant differences in students' Level of application. There were no statistically significant differences between students' attitudes in the two groups.

(Broussad, 2002) carried out a study to examine the relationship between classroom motivation and academic achievement in first and third graders. The subjects included (122) first grade children and (129) third grade children from a mid-sized, southern city. The total sample comprised of (251) children, 59% non-white, and 57% female. The study findings from the current study were consistent with the literature reviewed. Higher levels of mastery motivation and judgment motivation found to relate to higher grades in third graders. It is important to note, however, that only higher levels of mastery motivation, not judgment motivation, found to relate to higher grades in first graders.

2.10.3. Teacher studies

(Cheng, M., Lin et al, 2015) examined the extent to which computerized learning games affect the motivation of students to learn science. The aim of the course was to define the role of educational programs such as electronic learning games on bridging the gap between students and the curriculum in science, and their role in raising their motivation towards learning. The study was conducted on a sample of (5) teachers in secondary schools, The results of the study show that educational and computer programs increase student motivation towards learning and illustrate many ambiguities in learning science from teachers' point of view.

(Ching, Kong, Cheng et al, 2014) conducted a study aimed to study the attitudes of science teachers at the basic stage in Hong Kong towards the educational programs and the obstacles facing application processes and the extent to which they use electronic resources to identify their needs and suggestions to meet the students' needs in learning science. The study used descriptive methods, using an electronic questionnaire on a sample of 250 science teachers. The results of the study show that teachers see great difficulties in using and providing educational software in science education.

The study of (Chen & Jang, 2013) explored the reasons of using electronic books and technologic pedagogical and content knowledge of Taiwanese elementary mathematics and science teachers. The purpose of this study was to examine the reasons of elementary school mathematics and science teachers for using or not using e-books, and to assess how the use of e-books relates to TPACK among Taiwanese teachers. There has been little quantitative research; the study used a questionnaire to collect data from instructors at elementary schools. TPACK questionnaire mailed to elementary schools, which randomly selected

across different parts. (680) accurate questionnaires returned for factor analysis of the survey. There was no significant difference found in TPACK according to gender, except for in teachers' technological knowledge. Teachers who had more years of teaching experience demonstrated significantly higher TPACK than the teachers who had fewer years of teaching experience.

2.10.4. Comment on previous studies

This chapter presented several studies, which dealt with independent and dependent variables of the study. During this chapter, good number of studies found that dealt with each variable alone, while what makes this study is special is the connection between these variables. From the previous review of the related literature, the researcher in surveying the related literature faced several problems; one of these problems is that there is limited studies, which connect between the variables, which the researcher talks about in the study. From the previous studies, it found that many of these studies were interested in highlighting the role of using computer in education. In view of this, previous studies used to identify aspects related to the subject of the study, in addition to enriching the theoretical part of the current study, as well as in the methodology used and building the study tool. In addition to discuss, find and recommendations of these studies, it also contributed to the interpretation of the findings of the present study; this makes the research results supported by influential real models.

CHAPTER THREE:

Methodology

The descriptive analytical approach used in the analysis of the educational module (unit of human body organs[1]), the construction of the specification table, and the attitudes of 6th graders science teachers towards using digitization program of education in the study of science. To understand and analyze the student's achievement test, the semi-experimental approach used. This approach is not different in the general framework related to the way and types of experience from the experimental approach. However, external variables are not adjusted to the extent that they are set in the experimental approach because of their difficulty to be applied to many phenomena, humanity, and its estrangement in practice, and because of its relevance to the nature of the problem that the researcher is studying. Two groups were adopted, one experimental (digitized), the other is the control (taught in Normal way). After conducting the experiment, an analytical test and a measure of the trend to detect differences in the performance of the two groups were applied

The data of the study was collected from two sources:

- Secondary data was collected through scientific references, in addition to local and external university papers. It depended on books, articles, and studies published on specialized scientific websites to develop the study and help the reader to understand it.
- Primary data: The questionnaire was used as a primary tool for collecting data from the original study community by referring to the previous literature

[1] Human body organs : An organ is a self-contained group of tissues that performs a specific function in the body. The heart, liver, and stomach are examples of organs in humans. The word organ comes from the Latin *organum*, which means "instrument."

3.1. The study population and sample:

The population of this study is comprised of all 6th Graders (males and females) in governmental schools at Bethlehem District during the second semester of the academic year 2018-2019. The whole population was (3420) students as per the documentation of the Ministry of Education's records.

The study community also included all 6th graders teachers who teach science. The study aims at identifying their attitudes towards using the program of digitization education in science teaching.

Table 3.1 Students' Population

	Total	**Male**	**Female**
Population	3420	1720	1700
Digitized pop	508	244	264
Control pop	2912	1476	1436

Table 3.2 Teachers' Population

	Total	**Male**	**Female**
Population	10	4	6

The study sample consisted of (4) classrooms for the 6th graders students (males and females) for students aged between 12-13 years. They were chosen in a simple random sampling. Two study groups in both the Mariam Al-Athraa Primary School for Girls and the Salah Al-Din Primary School for Boys to form the experimental group. Two semesters were selected in a simple random sampling between the classrooms in both Al-Shaheed Saeed Al-Aaas Primary School for Boys and Al-Khader Primary School for Girls to form the control group. These schools were chosen in purposive sample selection (in this purposive sampling, you need to use your judgement to select cases that will best enable

you to answer your research question(s) and to meet your objectives). For this reason, it is sometimes known as judgmental sampling. It is often used when working with very small samples, such as in case study research, or when you wish to select cases that are particularly informative (Neuman, 2005).

The purposive sample was used for the following reasons:

- The need to choose schools that apply digitization and others, which do not apply digitization.
- The schools applied for digitization have the greatest number of classrooms.
- The availability of digital equipment in schools

The number of students in the experimental group (34 females and 32 males) student, while the number of students in the control group was (122) (27 females and 29 males) students.

Table 3.3 Students Groups for the test

Group	experimental	Control	Total
Male	30	30	60
Female	34	28	62
Sum	64	58	122

To study the Teachers Attitudes to use digitization:

As shown in table 2.3 above, the population of teachers who apply the digitization is small with (10) teachers, so that the whole population was taken.

To study the student motivation of using digitization:

A total of (66) students were taken for the experimental group.

3.2. Study Instruments

To achieve the objectives of the study, which aims to detect The role of digitization on the achievement of the 6th graders students, and to reveal The role of digitization in the

motivation towards learning, and teachers' attitudes towards digitization in teaching through the fourth unit (*human body organs*), the following tools were used:

1 – The analysis of the content of Human Body Organs unit of the 6th graders for science according to Bloom's Taxonomy.

2 - Construction and preparation of the Achievement test.

3 - Building and preparing a measure of trends towards digitization from the teacher's perspectives.

4 - Building and preparing measure of student's motivation using digitization.

3.2.1. Analysis of material required for the achievement test

The construction of the achievement test starts with the content, which evaluates the unit contents, derives its cognitive behavioral goals, the number of teaching sessions were estimated to end this unit with eighteen classroom session.

In addition to adopting content areas of the unit of the human body organs, and the levels of behavioral cognitive goals. Then, necessary specification table started to be constructed

As a key theme, the lessons were divided into:

Parts of the circulatory system, circulation of the human body, diseases of the circulatory system, urinary system, and urinary health.

The levels of cognitive objectives were divided into:

Knowledge, comprehension, application, synthesis, analysis, and evaluation of Bloom's hierarchy. Then, this table is used as a nucleus for the design of the post-acquisition test.

Through the Appendix Table (Appendix 2), comprehensive questions were formulated for all parts of the content. It has taken into consideration the levels of the proposed goals that are based on Bloom's Taxonomy. Additionally, each lesson took its share of questions to suit the time of implementation proposed by the teacher,

For digitized students who cooperate with their teachers, a study plan was set on a teaching plan (Appendix 3) to teach the unit using the MOE digitized curriculum and equipment is required, such as tablets, interactive board, and classroom management system.

Analysis of human body organs content

The analysis of unit's content was presented to the Arbitration Committee, which includes (university professors, educational supervisors, and schoolteachers) (Appendix 9), so they reviewed, audited and modified according to their experience.

There was a consensus on most of the goals, which were adjusted based on their guidance. The researcher produced an analysis of the content mentioned in the (Appendix 2), to help us build a specification table for the Achievement Test (Appendix 4).

3.2.2. Achievement Test

a test designed to measure the knowledge of student in the topics that learned and to achieve it the following procedure set:

3.2.2.1. Development of Achievement Test

The researcher referred to several resources during the process of designing the test. The related literature reviewed, checked the opinion of juries, supervisors, and experienced teachers, in addition to the results of content analysis for Unit "4" in Sciences for Palestine digital curriculum for sixth grade.

The aim of the test:

The achievement test are the tools used by teachers and specialists in the educational process to identify the extent to which the objectives of the educational learning are achieved. They also aim to identify the effectiveness of some methods and means,

This test aims to:

- Measure the extent of students' achievement in science according to the level of knowledge "Bloom" and intended to consider (Knowledge Comprehension, Analysis, Synthesis, Application and Evaluation).
- Measure the difference between students' achievement in the experimental group (digitization), and students' achievement in the control group (Normal method) in science.
- Identify the effectiveness of the computer unit in the development of the ability to self-learning.

Formulation of the test questions:

The multiple-choice style is selected because it is one of the most experimental styles objectively in the correction. **Test questions have been formulated to be:**

1. Fit with behavioral objectives, which need to be measured.
2. Integral with the questions linguistically and scientifically.
3. Observe the content of the experimental unit.
4. Consider pupils' characteristics.
5. Clear, and unambiguous.

The Matching Question, which is often used to evaluate recognition and recall in courses where the acquisition of detailed knowledge is an important objective by pairing (e.g., definitions) with one of the choices provided.

Preliminary form of the achievement test.

The test was put in its initial form and consisted of (39) paragraphs. After its preparation, it was presented to a group of arbitrators to take their opinions about the test paragraphs, and its validity to measure the objectives to be achieved in the unit of the human body organs, or simply to delete or modify some paragraphs. It should be noted that some of the paragraphs have been modified.

The Application Testing:

After the preparation of the test in its preliminary form, the test was applied to a sample of (30) students from the 6^{th} graders who were selected from outside the sample of Mariam Al-Athraa Primary School for Girls. The exploratory experiment was conducted to:

- Determine the time taken by the test answer when applied to the basic research sample.
- Ensure the validity of the test and its stability.
- Calculate of difficulty and discrimination coefficients for test paragraphs.

Correction of Test Questions:

After the sample students answered the questions, the classroom management program that was created by using the exam electronic corrects and gives the results of the examination directly under the supervision of the researcher and the teacher of the subject, the test was corrected. One point was given for each multiple-choice question, two points for matching questions, and three points for questions that requires the completion of blank spaces and

correction. Thus, the grade obtained by students is limited to (0-30). In addition, the number of duplicates was calculated for the wrong answer on each test paragraph.

3.2.2.2. Administration of the Achievement test

Calculate the validity and reliability of the test

Validation of the test is intended for the ability to measure what was put to measure. The validity of the test was verified in the following ways:

A. **Content Validation**: The accuracy of the content is intended to determine the extent to which the test paragraphs represent the subject of the study to be measured according to Bloom's Taxonomy. This type of honesty has been achieved through the test construction procedures: analyzing the content of the unit, determining the educational objectives, setting the test paragraphs, which represent the content and objectives, as confirmed by the agreement of the members of the Arbitration Committee (Appendix 9).

B. **Internal consistency**: Intrinsic consistency is the correlation between the scores of each goal level and the total test score, as well as the degree of correlation of each of the test paragraphs with the overall level of objectives. Table (3.4) shows the correlation coefficients of each level of cognitive objectives to the overall test score:

Table 3.4: Correlation coefficients between each cognitive level and the total score of the test

Level	Coefficient of correlation with total score	Level of significance
Knowledge	0.540	0.01
Comprehension	0.595	0.01
analysis	0.611	0.01
Synthesis	0.820	0.01
Application	0.640	0.01
Evaluation	0.756	0.01

It is clear from Table (3.4) that all correlation coefficients between each level of knowledge and the overall degree of test are statistically significant.

The correlation coefficient of each of the test paragraphs was calculated with the level of the objectives to which it belongs, and the paragraphs that did not reach the level of statistical significance were excluded.

Calculation of ease and discrimination coefficients:

A - **Degree of ease of each paragraph of the test**:

The calculation of the degree of ease of each paragraph in the test used the following equation:

$$\text{Ease} = \frac{\text{Number of correct answers (in upper and lower group)}}{\text{number of correct answers} + \text{number of wrong answers}} * 100\%$$

The aim of calculating the degree of ease of the test paragraphs was to delete the paragraphs whose degree of plummeting is less than 20% or more than 80%. The ease of testing between (33.33 and 86.0) (Appendix 5).

The coefficient of discrimination of each paragraph of the test.

The coefficient of discrimination of each paragraph in the test was calculated by using the following equation:

$$\text{Discrimination} = \frac{\text{No. correct in the upper group} - \text{No. correct in the lower group}}{\text{half of the individuals in the two groups}} * 100\%$$

To obtain a coefficient of discrimination for each of the test subjects, students were divided into two groups of (15) students, who received the highest scores in the test, and a minimum group of (15) of the group of students who received the lowest scores in the test. A minimum of 20% or more was adopted to distinguish the paragraph, while paragraphs with less than 20% were deleted.

Determine the relative weight of the components of the test:

After analyzing of the unit selected, (human body organs), it helped to determine the relative importance of each subject by dividing the number of quotas allocated to each subject to the total unit quotas, after the adoption of the views of many specialists in this subject of experts, mentors, and teachers specialized in science teaching. After the application of the sample, the exploration and calculation of the correlation coefficient of each of the test paragraphs with the level of objectives to which it belongs, Table 3.5

Table 3.5 Analyse Test paragraphs and wait

levels	Test paragraphs	questions		wait	
		Number	%	point	%
knowledge	1, 2, 23	3	11.5 %	3	10%
comprehension	9, 13, 18	3	11.5 %	3	10%
Application	4, 14, 24*, 25*	4	15.4 %	6	20%
Analysis	5, 6, 11, 12, 17, 19, 20, 21	8	30.8 %	8	26.65%
Synthesis	7, 15, 16, 22	4	15.4 %	4	13.35%
Evaluation	3, 8, 10, 26**	4	15.4 %	6	20%
sum		26	100%	30	100%

* Two-point questions.

** Three-point questions.

Test reliability:

It means the test, which almost gets the same result if applied to the same students again. The stability coefficient was calculated in two ways:

A. **Split half**: The correlation coefficient between the responses of students of the survey sample on the odd and even points of the test using the Pearson equation was stable (0.702). After the correction using the Spearman-Brown equation (0.7), these values indicate that the test is good consistently.

B. **Alpha Cronbach method**: In the light of the above, the researcher finds that honesty and persistence have been achieved to (0.815), which is high degree that can reassure the application of the test on a sample studying.

Determination of collection test time:

The time of the students' performance was determined by calculating the mean of the student's first and last response time. The average time taken by the survey sample was 45 minutes.

Instructions of the Test (for the applicant)

The instructions were clearly written on an attached paper with the test. According to the instructions, the teacher must tell students about the aim of the test that was designed for a scientific research purpose, and that it has nothing to do with their school marks. The teacher must read the question clearly for the students and describe the debate situation intended. The test was introduced to the Arbitration Committee for remarks and suggestions for modification. For experimental sample group, they applied for the test through the classroom network using the classroom management program and the 45-minute time-specific setting. The electronic test automatically disables the test and gives a report on each student's marks in each question automatically. At the same time, the students of the control group presented the test in the Normal way, the final version of the exam distributed to students (Appendix 6)

3.2.3. Teacher Questionnaire

A questionnaire was designed to study the attitudes of science teachers towards of digitization.

3.2.3.1. Development of Questionnaire

Steps used to build a trend scale:

- **Determine the aim of the scale**: The aim of the scale was to identify teachers' attitudes towards the digitization program of education to develop achievement in science for the 6th graders in Palestine.
- **The scale paragraphs are constructed according to the following steps:**
    - Access to educational literature and theoretical studies in this field.
    - Analysis of previous studies related to the subject of the study, especially regarding trends towards computer programs.
    - Survey opinion and survey conducted on the scale of trends in general.
    - Assurance that some paragraphs of the scale are positive, and some others are negative.

Primary image of the scale:

Based on above, the scale was prepared. It included four domains, which consisted of (40) paragraphs. After drafting the paragraphs of the scale, they were presented to a panel of arbitrators (Appendix 9), to explore their views on validity:

- Number of scale items.
- The extent to which the measurement paragraphs are represented for the objectives to be measured.
- The authenticity of the paragraphs of the standard, linguistically and scientifically.

Method of response determination:

The scale items gave the teachers a graduated scale according to the five-level Likert method (Always, frequently, Sometimes, Scarcely, never)

Therefore, grades are given as follows:

	Always	frequently	Sometimes	Scarcely	never
Positive paragraphs	5	4	3	2	1
Negative paragraph	1	2	3	4	5

The questionnaire was formed into two parts:

Part 1:

This part is about the teachers, and gathers information about their demographic information, gender, academic qualification, years of experience, sex of the school, the place of the school in which it is taught, the training courses they received in the field of digitization, and teacher's specialty.

Part 2:

This part includes forty paragraphs, and adopts the five-point scale of responses and these paragraphs were distributed in four domains:

The first domain is the field of students. It deals with the benefits that accrue to students because of the use of digitization program from the perspective of teacher's, and this domain includes fourteen paragraphs.

The second domain is the teachers its focused, items of the questionnaire in this domain on the views and views of teachers' respondents about the benefits that teachers gain when using the digitization program, are This domain of twelve paragraphs.

The third domain is the field of "means and methods" and which contain ten paragraphs, and considered the reasons for using the digitization program in science from the point of view of respondents

The fourth domain included the curriculum and it contains four paragraphs.

It should be noted that the questionnaire included many negative paragraphs.

3.2.3.2. Administration of Teachers' Questionnaire

Since the whole population is taken because the sample is very small (10), it was agreed to distribute the survey as it, and analyze Internal consistency later.
The questionnaire was distributed to some teachers in person and to others by e-mail, and they were collected from the whole population of the study.see (Appendix 8).

3.2.4. Students' Questionnaire

A specific questionnaire designed to study students' internal and external motivation towards the digitization in science education.

3.2.4.1. Development of Student questionnaire

Steps to build a trend scale:

1. **Determine the aim of the scale**: The aim of the scale is to identify students' motivation towards the digitization program of education in the development of 6th graders students' achievement in science in Bethlehem District.
2. **The scale paragraphs are constructed according to the following steps:**
   - Access to educational literature and theoretical studies in this field.
   - Analysis of previous studies related to the subject of the study, especially regarding trends towards digitization.
   - Survey opinion and surveys conducted on the scale of trends in general.
   - Assurance that some paragraphs of the scale positive, while some others are negative.

Primary view of the scale:

Based on the above, the scale was prepared. It included two domains and consisted of (38) paragraphs. After writing the paragraphs of the scale, they were presented to an Arbitrators Committee to evaluate and judge its validity.

- Number of scale items.
- The extent to which the measurement paragraphs are represented for the objectives that need to be measured.
- The veracity of the paragraphs of the standard linguistically and scientifically.
- The extent to which the scales are suitable for the 6th graders students.

Determining the response method:

The scale items gave the teachers a graduated scale according to the five-level Likert method (Always, frequently, Sometimes, Scarcely, never)

Therefore, the grades are given as follows:

	Always	frequently	Sometimes	Scarcely	never
Positive paragraphs	5	4	3	2	1
Negative paragraph	1	2	3	4	5

3.2.4.2. Administration of the students' questionnaire

The scale was applied on a sample of 30 sixth grade students from outside of the study (pilot study) sample (the same survey sample as the Achievement test)

Validity of the scale:

The validity of the scale was calculated by the sincerity of the arbitrators, who ascertain the appropriateness of the vocabulary, the measure of the purpose for which this scale is set to identify the attitudes of sixth graders approach to use digitization. The questionnaire was presented to the Arbitrators' Community (Appendix 2) to take their opinion on the extent of the contribution of its vocabulary.

Internal consistency:

The reliability of the internal consistency of the scale was calculated by finding the correlation coefficient between each scale domain, and the total score of the scale as shown in Table 3.6:

Table 3.6 The reliability of students' questionnaire

The field	Coefficient of correlation	Level of significance
External motivation	0.881	0.01
Internal motivation	0.745	0.01

The table above shows that all of the domain of the scale are statistically significant with the total score of the scale. Also, the validity of the internal consistency of the scale was calculated by finding the correlation coefficient between each paragraph of the scale and the total score of its field.

Reliability of questionnaire

Stability calculation it confirmed by:

- **Half-way**: The questionnaire was divided into two halves (odd paragraphs and even paragraphs), and a coefficient correlation was calculated between responses of students of the exploratory sample to odd paragraphs. Their responses to parasites using the Pearson equation had a stability coefficient of (0.730), and after correction and using the Spearman-Brown equation, where the total stability coefficient (0.818), these values indicated that the scale is consistently high.
- **The Cronbach Method**: It is confirmed that the standard is maintained in the Alpha Cronbach method because it gives the minimum for the stability coefficient of the scale. It does not require re-application, for it uses all expressions scale. It has been shown that the coefficient of Alpha Cronbach is (0.71), which is a good and satisfactory factor in such studies.

The final version of questionnaire

After ascertaining the sincerity and persistence of the measure of trends of students' motivation towards digitization of education, the final questionnaire will include 36 paragraphs. The questionnaire were distributed to students in person and collected from the whole sample of the experimental group of the study. See (Appendix 7).

The equivalence of the two study groups:

The equivalence was verified of the experimental and control groups in terms of:

-Academic achievement in science during the first semester.

-Achievement in the previous unit.

A summary of the parity of the two groups in each of these aspects and the table is presented below. Table (3.7) shows averages, standard deviations, and significance of differences by using T-test between the experimental and control groups:

Table 3.7 T-test between the experimental and control groups

Variable	Sample	No	Mean	SD	T-Test	Significance
Academic achievement in science in first semester	Experimental Group	64	64.893	14.221	2.07	No significance on 0.05
	Control group	58	71.368	20.294		
Achievement in the previous unit	Experimental Group	64	20.015	5.295	4.848	No significance on 0.05
	Control group	58	26.421	9.100		
Pre-test	Experimental Group	64	18.575	5.607	0.228	No significance on 0.05
	Control group	58	18.342	5.755		

The table above shows that the two study groups are equal, and can be commented on variables.

Parity is as follows:

- Regarding the academic achievement in science exam in first semester:
  The arithmetic mean of the application of the experimental group was equal (68.9), and the arithmetic mean of the application of the control group equals (70.85).

3.3. Study variables

Following to the study Model shown in Chapter 1, the study variables are :

<u>First:</u> Variables to study the role of using digitization in student achievement:

Independent variable:

a- Method of teaching (Normal method of curriculum, use of digital curriculum.).
b- Gender (male & female)
c- Interaction between the method of teaching and gender.

Dependent Variable

a- Achievement test.

b- Students' motivation towards digitization education

<u>Second:</u> Variables to study the attitudes of the 6th graders teachers towards using the digitization program of education in teaching science:

Independent variables:

a- **Gender has two levels**: male, female.

b- **Academic qualification**: It includes three levels: Diploma, Bachelor, and Master.

c- **Educational experience**: It includes four levels: less than 5 years, from 5 years to less than 10 years, from 10 years to less than 15 years, 15 years and above.

Dependent Variable:

a- **Teaching method:** Different teaching methods, including lectures, cooperative learning (students were divided into groups and completed learning tasks collaboratively, e.g., (Huang et al., 2012), inquiry-oriented learning (using problem-, project-, or inquiry-based methods with mobile devices for learning, e.g., (Lowther et al., 2003). They also include self-directed study (teachers/researchers did not designate or implement specific teaching scenarios for students to follow, students use mobile devices for self-paced learning, e.g., (Chen and Li, 2010), (Chen et al., 2013), computer-assisted testing/assessment (using mobile devices for formative assessment or quizzes in classroom or outdoors, e.g., (Agbatogun, 2012), and mixed methods thereof.

b- **Method of teaching (Normal method of curriculum, use of digital curriculum).** The comparison included (120) students, (60) of whom used the program of digitization education (experimental group), and (60) did not use the digitization program for education (the control group). The curriculum is the same, but the digitization group was studied using a digital book. The control group was studied by using non-digital books, and through analyzing the educational content of the human body organs unit to determine general output, and the expected educational attainment of this unit. Preparation of a quarterly plan for the unit of human body organs (Appendix 2) Shows recruitment aspects, such as tablets and technology available at school, application of the unit, from the preparation of supplies and devices.

c- **Digital curriculum:** It is designed to teach or reinforce curriculum standards, which are using game-like elements and other engaging features. For example, a program may be reinforced by using video lessons and practice activities. Personalized learning programs with built-in assessments, such as computer adaptive assessments, make it possible for teachers to individualize instruction to meet the unique needs of each student.

d- **Achievement:** It is the ability of students to know and understand the unity of the human body devices using digitization. It is measured by the degree to which the student in the achievement test prepared in this study.

e- **Bloom Taxonomy:** It is a hierarchical ordering of cognitive skills that can, among countless other uses, help teachers teach and students learn. The unit is divided into goals, which are classified within the levels of the Bloom's Taxonomy. We can use it to create our achievement test based on a specified table.

The six Levels of Bloom's Taxonomy

- The first level of Bloom's Taxonomy is knowledge
- The second level of Bloom's Taxonomy is comprehension
- The third level of Bloom's Taxonomy is Application.
- The fourth level of Bloom's Taxonomy is Analysis
- The fifth level of Bloom's Taxonomy is synthesis
- The sixth and final level of Bloom's Taxonomy is evaluation

f- **Motivation:** The motivation in this study was to identify the level of motivation and nature of learning in the experimental group and those who use the digitization of education. It attempts to diagnose their problems of achievement, and provide then with the best educational conditions, which help to achieve the best levels of science and knowledge.

g- **Internal motivation:** The students of digitization of education as measured by the study instruments as the student's self-interest in learning through the pursuit of

good preparation in most academic aspects. It also includes the quest to learn new things and adopt the objectives of the pursuit of knowledge.

h- **External motivation:** The student seeks to adopt strategies to reduce his/her sense of failure, by setting very low or very high goals that may exceed his/her abilities, which cannot be achieved and need to get the acceptance and satisfaction of teachers.

Attitudes of the 6th graders teachers of science towards using the digitization program of education in teaching the subject.

The trend towards teaching by digitization education can be stated as "The outcome of the responses of the study group of the science teachers of the 6th graders towards learning the unity of human body organs from the science book. It is an indicator of acceptance, rejection, or neutrality and expressed by the teacher's response to the scales of the questionnaire". It includes four aspects (student, teacher, methods, and curriculum).
To study teachers' attitudes towards digitization in government schools in Bethlehem governorate, we must deal with the following variables:

1. **Independent variables**: Demographic variables (gender, age, educational qualification, years of Experience).

2. **Dependent variable:** The role of using digitization on students' motivation and achievement from the teachers' perspective. This will be measured through concentration and distraction of students from educational content. Students' participation, interaction and communication can stimulate the creativity, innovation and excellence of learners, promote self-learning and independence, enhance students' attitudes towards learning and knowledge. Students' interest in learning style and skills are required, besides their preparation in class with concentrating students.

3. **The dependent variable:** The use of digitization of education from the teachers' point of view can be measured through the difficulties of teaching digitization due to lack of experience, training or knowledge of technology, ability of the teacher to

control the sections, and the change in the teacher's role in digital education. Other issues include the compatibility of available capabilities with the requirements of the digitization method and obstacles, students' interactive participation and increased collection using digitization, and teachers' desire to use the digitization.

4. **The dependent variable:** The reasons of using digitization of education in science can be measured through students' increased interaction with tablets, for they save time and effort. Additionally, the use of digitization in science education improves the quality of education and varies in teaching methods. Finally, the adoption of digitization in education is a development of the educational.

5. **The dependent variable:** The view of the responding teachers on the digitized curriculum can be measured through the nature of curriculum design, which does not encourage the use of digitization effectively. In addition, the momentum of the curriculum weakens the use of digitization in education in depth, evaluation of the curriculum, and the design of the curriculum by digitization enhances the role of the learner in education.

3.4. Statistical treatment:

To achieve the objectives of the study and to verify its hypotheses, the mean and standard deviations of the scores of the two groups were calculated on the achievement test. As for the independent samples, t-test compares the means of the two independent groups used to determine whether there is statistical evidence that the associated population means are significantly different. Post-hoc (Tukey's Test) analysis was also used to provide much greater insight into the differences or similarities between specific groups; moreover, to determine the significance of the differences between the averages, ANCOVA analysis was used.

CHAPTER FOUR:

Result of The Research

This chapter reviews the results and analysis of the qualitative data, the compilation of the questionnaire and the results and analysis of the quantitative findings of the study. The findings are also discussed in the light of previous research findings and available literature, where applicable, in order to identify similarities and differences between this study and previous studies and literature. A comprehensive description of the research methodology was given in Chapter 2.

4.1. Achievement Test Statistics

4.1.1. Demographic Features of Participants

Table 4.8 Demographic Distribution of Participants (N=122)

Demographic Features		Frequency	Percent
Gender	Male	61	50.0
	Female	61	50.0
School using digitize education	No	56	45.9
	Yes	66	54.1
School name	Al-Shaheed Saeed Al-Aaas	29	23.8
	Al-Khader Basic School for Girls	27	22.1
	Mariam Al-Athraa School for Girls	34	27.9
	Salah Al-Din School for Boys	32	26.2

In Table (4.8), the data revealed that 50% of 122 respondent in the study are male and 50% are female. The percentage of students in schools using digitization education 54.1% and the percentage of students in schools doesn't using digitization education 45.9%. Also, the students are in Al-Shaheed Saeed Al-Aaas for boys and doesn't using digitization education is 23.8%, the students are in Al-Khader Basic School for girls and doesn't using digitization education is 22.1%, the students are in Mariam Al-Athraa School for girls and using digitization education is 27.9% and students are in Salah Al-Din School for boys and using digitization education is 26.2%.

4.1.2. Hypotheses Testing:

To test study exam hypotheses, analysis of variances (One-Way ANOVA), Independent Sample T-test and Nonparametric test used. The investigation focused on the demographic variable over the exam results. Whereas the variable tested for this study is to validate the influence of gender, school name and whether the school using digitization in education.

Table 4.9 Independent Sample T-test Group Statistics

Sample	Size	Mean	SD	t	DF	Sig.	Result
Experimental	66	17.3788	3.63	0.940	120	0.349	There is no significant different
Control	56	16.7500	4.80				

Table (4.9) shows the descriptive statistics related to the exam results and the school using digitization education, however the average mean for the exam result = 17.39, and the average mean for the exam result with the schools doesn't using digitization education = 16.66. Also, the mean average of the exam result shows a little difference in mean average of exam results with higher mean to school using digitization in education which indicate a better education result than the Normal education.

Table 4.10 Independent Sample T-Test

	t-test for Equality of Means

		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Exam Result	Equal variances assumed	.940	120	.349	.71807	.76429	-.79517	2.23131
	Equal variances not assumed	.919	101.113	.361	.71807	.78175	-.83268	2.26883

According to Table (4.10), it was found that achievement test result towards that the school using digitization in education or not doesn't have a significant difference.

Table 4.11 Tukey Post Hoc Tests for school's result

Dependent Variable: Exam Result				
Tukey HSD				
(I) School name	(J) School name	Mean Difference (I-J)	Std. Error	Sig.
Al-Shaheed Saeed Al-Aaas	Al-Khader Basic School for Girls	.84674	1.04137	.848
	Mariam Al-Athraa School for Girls	-2.46045	.98429	.045
	Salah Al-Din School for Boys	1.97522	.99835	.202
Al-Khader Basic School for Girls	Al-Shaheed Saeed Al-Aaas	-.84674	1.04137	.848
	Mariam Al-Athraa School for Girls	-3.30719*	1.00377	.007
	Salah Al-Din School for Boys	1.12847	1.01756	.685
Mariam Al-Athraa School for Girls	Al-Shaheed Saeed Al-Aaas	2.46045*	.98429	.045
	Al-Khader Basic School for Girls	3.30719*	1.00377	.007
	Salah Al-Din School for Boys	4.43566*	.95907	.000
	Al-Shaheed Saeed Al-Aaas	-1.97522	.99835	.202

Salah Al-Din School for Boys	Al-Khader Basic School for Girls	-1.12847	1.01756	.685
	Mariam Al-Athraa School for Girls	-4.43566*	.95907	.000

In Table (4.11) by using Tukey Post Hoc Tests it found that the Mariam Al-Athraa school (experimental, girls) become to have a statistically significant in achievement test among all other schools, and Salah Al-Din School (experimental, Boys) for Boys don't have a statistically significant in achievement test among any school.

Table 4.12: analysis of variance for blooms Taxonomy with schools either using digitize or not

		Sum of Squares	df	Mean Square	F	Sig.
Knowledge	Between Groups	1.773	3	.591	1.240	.298
	Within Groups	56.259	118	.477		
	Total	58.033	121			
Comprehension	Between Groups	2.577	3	.859	1.489	.221
	Within Groups	68.054	118	.577		
	Total	70.631	121			
Analysis	Between Groups	34.302	3	11.434	5.345	.002
	Within Groups	252.419	118	2.139		
	Total	286.721	121			
Synthesis	Between Groups	19.639	3	6.546	5.256	.002
	Within Groups	146.959	118	1.245		
	Total	166.598	121			
Application	Between Groups	34.436	3	11.479	8.045	.000
	Within Groups	168.359	118	1.427		
	Total	202.795	121			
Evaluation	Between Groups	13.743	3	4.581	2.161	.096
	Within Groups	250.125	118	2.120		
	Total	263.869	121			

The results in the One-Way ANOVA tests in Table (4.12) explain blooms Taxonomy significant level with all schools either using digitize education or not, we conclude that the mean Analysis, Synthesis and Application is significantly different for at least one of the schools using digitization groups (F Analysis, 118= 5.345, $p < 0.002$), (F Synthesis, 118= 5.256, $p < 0.002$) and (F Application, 118= 8.045, $p < 0.000$). Note that the ANOVA alone does not tell us specifically which means were different from one another. To determine that, we would need to follow up with post-hoc tests

Post-hoc analysis often provides much greater insight into the differences or similarities between specific groups and is, therefore, an important step in data analysis. Tukey's Test is just one of many methods available in post-hoc analysis and as mentioned, is the best method in a wide variety of cases.

Table 4.13 Tukey Post Hoc Tests for all bloom's Taxonomy with all schools

(I) School name	(J) School name	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Knowledge						
Mariam Al-Athraa	Saeed Al-Aaas	.018	.175	1.000	-.44	.47
	Al-Khader	.146	.178	.845	-.32	.61
	Salah Al-Din	.294	.170	.313	-.15	.74
Salah Al-Din	Saeed Al-Aaas	-.276	.177	.406	-.74	.19
	Al-Khader	-.148	.180	.844	-.62	.32
	Mariam Al-Athraa	-.294	.170	.313	-.74	.15
Comprehension						
Mariam Al-Athraa	Saeed Al-Aaas	.023	.192	.999	-.48	.52
	Al-Khader	.117	.196	.933	-.39	.63
	Salah Al-Din	.358	.187	.227	-.13	.85

Salah Al-Din	Saeed Al-Aaas	-.335	.195	.317	-.84	.17
	Al-Khader	-.242	.198	.616	-.76	.28
	Mariam Al-Athraa	-.358	.187	.227	-.85	.13
Analysis						
Mariam Al-Athraa	Saeed Al-Aaas	.180	.370	.962	-.78	1.14
	Al-Khader	.077	.377	.997	-.91	1.06
	Salah Al-Din	1.278*	.360	.003	.34	2.22
Salah Al-Din	Saeed Al-Aaas	-1.098*	.375	.021	-2.08	-.12
	Al-Khader	-1.200*	.382	.011	-2.20	-.20
	Mariam Al-Athraa	-1.278*	.360	.003	-2.22	-.34
Synthesis						
Mariam Al-Athraa	Saeed Al-Aaas	.544	.282	.222	-.19	1.28
	Al-Khader	.943*	.288	.007	.19	1.69
	Salah Al-Din	.960*	.275	.004	.24	1.68
Salah Al-Din	Saeed Al-Aaas	-.416	.286	.469	-1.16	.33
	Al-Khader	-.016	.292	1.000	-.78	.74
	Mariam Al-Athraa	-.960*	.275	.004	-1.68	-.24
Application						
Mariam Al-Athraa	Saeed Al-Aaas	1.15619*	.30193	.001	.3693	1.9430
	Al-Khader	1.36819*	.30791	.000	.5658	2.1706
	Salah Al-Din	.66912	.29419	.110	-.0976	1.4358
Salah Al-Din	Saeed Al-Aaas	.48707	.30624	.388	-.3110	1.2851
	Al-Khader	.69907	.31214	.119	-.1144	1.5125
	Mariam Al-Athraa	-.6691	.2941	.110	-1.4358	.0976
Evaluation						
Mariam Al-Athraa	Saeed Al-Aaas	.540	.368	.461	-.42	1.50

	Al-Khader	.656	.375	.304	-.32	1.63
	Salah Al-Din	.877	.359	.074	-.06	1.81
Salah Al-Din	Saeed Al-Aaas	-.337	.373	.803	-1.31	.64
	Al-Khader	-.221	.380	.938	-1.21	.77
	Mariam Al-Athraa	-.877	.359	.074	-1.81	.06

Table (4.13) shown Post-hoc analysis often provides much greater insight into the differences or similarities between all the schools, we conclude that there is a significant difference between Al-Shaheed Saeed Al-Aaas over Salah Al-Din School for Boys in the analysis results where ($p < 0.021$), there is a significant difference between Al-Khader Basic School for Girls over Salah Al-Din School for Boys in the Analysis results where ($p < 0.011$), there is a significant difference between Mariam Al-Athraa School for Girls over Salah Al-Din School for Boys in the Analysis results where ($p < 0.003$), there is a significant difference between Salah Al-Din School for Boys over Al-Shaheed Saeed Al-Aaas, Al-Khader Basic School for Girls and Mariam Al-Athraa School for Girls in the Analysis results where ($p < 0.021$, $p < 0.011$ and $p < 0.003$). Also there is a significant difference between Al-Khader Basic School for Girls over Mariam Al-Athraa School for Girls in the Synthesis results where ($p < 0.007$), there is a significant difference between Mariam Al-Athraa School for Girls over Al-Khader Basic School for Girls and Salah Al-Din School for Boys in the Synthesis results where ($p < 0.007$ and $p < 0.004$), there is a significant difference between Salah Al-Din School for Boys over Mariam Al-Athraa School for Girls in the Synthesis results where ($p < 0.004$). However, there is a significant difference between Al-Shaheed Saeed Al-Aaas over Mariam Al-Athraa School for Girls in the Application results where ($p < 0.001$), there is a significant difference between Mariam Al-Athraa School for Girls over Al-Shaheed Saeed Al-Aaas and Al-Khader Basic School for Girls in the Application results where ($p < 0.001$ and $p < 0.000$).

4.1.3. Attitudes towards using digitization effect based on gender:

By using independent non-parametric tests whether, use the Mann-Whitney U test or Kruskal-Wallis Test to understand whether attitudes towards using digitization effect awareness of gender and school. Table (4.14) Mann-Whitney U test shows that the differences between the mean ranks are statistically significant in the analysis results across

categories of gender. In addition, the mean ranks for female students = 69.34 is greater than the mean rank of male students = 53.66.

Table 4.14 Mann-Whitney U Test Sum Mariam Al-Athraa based on gender

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Knowledge is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.424	Retain the null hypothesis.
2	The distribution of Comprehension is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.130	Retain the null hypothesis.
3	The distribution of Analysis is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.013	Reject the null hypothesis.
4	The distribution of Synthesis is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.148	Retain the null hypothesis.
5	The distribution of Application is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.361	Retain the null hypothesis.
6	The distribution of Evaluation is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.111	Retain the null hypothesis.
Asymptotic significances are displayed. The significance level is .05.				

Table (4.15) Independent-Samples Kruskal-Wallis Test shows that: (1) the differences between the mean ranks are statistically significant in the analysis results across categories of school. Also, the mean ranks for Mariam Al-Athraa school for girl is the higher which mean that the female students and using digitization in education is better than others; (2) The differences between the mean ranks are statistically significant in the Synthesis results across categories of school. Also, the mean ranks for Mariam Al-Athraa school for girl is the higher which mean that the female students and using digitization in education is better than others; (3) The differences between the mean ranks are statistically significant in the Application results across categories of school. In addition, the mean ranks for Mariam Al-Athraa School for girl is the higher which mean that the female students and using digitization in education is better than others are.

Table 4.15 Independent-Samples Kruskal-Wallis Test

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Knowledge is the same across categories of School name.	Independent-Samples Kruskal-Wallis Test	.318	Retain the null hypothesis.
2	The distribution of Comprehension is the same across categories of School name.	Independent-Samples Kruskal-Wallis Test	.121	Retain the null hypothesis.
3	The distribution of Analysis is the same across categories of School name.	Independent-Samples Kruskal-Wallis Test	.002	Reject the null hypothesis.
4	The distribution of Synthesis is the same across categories of School name.	Independent-Samples Kruskal-Wallis Test	.003	Reject the null hypothesis.
5	The distribution of Application is the same across categories of School name.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
6	The distribution of Evaluation is the same across categories of School name.	Independent-Samples Kruskal-Wallis Test	.115	Retain the null hypothesis.
Asymptotic significances are displayed. The significance level is .05.				

Table (4.16) Mann-Whitney U test shows that the differences between the mean ranks are statistically significant in the Application results across categories of School using digitize education or not. In addition, the mean ranks for schools using digitize education = 72.51 is greater than the mean rank of schools doesn't using digitize education = 48.53.

Table 4.16 Mann-Whitney U test

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Knowledge is the same across categories of School using digitize education.	Independent-Samples Mann-Whitney U Test	.535	Retain the null hypothesis.
2	The distribution of Comprehension is the same across categories of School using digitize education.	Independent-Samples Mann-Whitney U Test	.460	Retain the null hypothesis.

3	The distribution of Analysis is the same across categories of School using digitize education.	Independent-Samples Mann-Whitney U Test	.055	Retain the null hypothesis.
4	The distribution of Synthesis is the same across categories of School using digitize education.	Independent-Samples Mann-Whitney U Test	.193	Retain the null hypothesis.
5	The distribution of Application is the same across categories of School using digitize education.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
6	The distribution of Evaluation is the same across categories of School using digitize education.	Independent-Samples Mann-Whitney U Test	.575	Retain the null hypothesis.
Asymptotic significances are displayed. The significance level is .05.				

4.2. Students Motivation Statistics

4.2.1. Test of Significance

Correlation Analysis

Pearson's correlation coefficient is a statistical measure of the strength of a linear relationship between paired data. In a sample, it is denoted by r and is by design constrained as follows:

$$-1 \leq r \leq 1$$

Furthermore:

- Positive values denote positive linear correlation;
- Negative values denote negative linear correlation;
- A value of 0 denotes no linear correlation;
- The closer the value is to 1 or –1, the stronger the linear correlation.

However, to conduct the test of significance like Independent Sample T-Test, Analysis of Variance (ANOVA) analysis we check the relationship between: (1) Internal motivation towards the digitization of education among students and (2) External motivation towards the digitization of education in students.

In Table (4.17) the data revealed that there moderate to strong and positive relationship between the first domain (Internal motivation towards the digitization of education among students) and the classes of digitization feel anxiety and tension, students understanding and comprehension of the material decreases when using digitization, the method of digitization is difficult to teach, the student lack self-confidence to use his tablet, the student accept the use of tablet devices, so he get special education to get high marks, the style of digitization helps the student to rely on himself a lot, the method of digitization encourages the student to search for new subjects related to the lesson material, the use of digitization help students to understand the material deeper and easier, using digitization is an interesting and fun way to learn, the failure in the digitization exam makes student insist on success in all other subsequent exams, tablet use encourages students to use the internet in education, student educational activities collectively give him happiness and pleasure, the students constantly training to use the tablet, using interactive boards is very easy, use the computer whenever student have the opportunity, students follow all that is new in digitization education, restoring any educational material at any time raises students motivation to learn and the students motivated by the class given by digitization.

Table 4.17 Pearson Correlation - Internal motivation towards the digitization among students

	IM		
	Pearson Correlation	Sig. (2-tailed)	N
The classes of digitization feel anxiety and tension.	.515**	0	66
My understanding and comprehension of the material decreases when using digitization	.604**	0	66
The method of digitization is difficult to teach.	.710**	0	66
I lack self-confidence to use my tablet.	-.298*	0.015	66
I accept the use of tablet devices, so I get special education to get high marks	.497**	0	66
The style of digitization helps me to rely on myself a lot.	.671**	0	66
The method of digitization encourages me to search for new subjects related to the lesson material.	.427**	0	66
The use of digitization teaches me the material deeper and easier.	.584**	0	66

Using digitization is an interesting and fun way to learn.	.673**	0	66
Failure in the digitization exam makes me insist on success in all other subsequent exams.	.694**	0	66
Tablet use encourages me to use the Internet in education.	.577**	0	66
My educational activities collectively give me happiness and pleasure.	.493**	0	66
I am constantly training to use the tablet.	.413**	0.001	66
Using interactive boards is very easy.	.384**	0.001	66
I use the computer whenever I have the opportunity.	.366**	0.003	66
I follow all that is new in digitizing education.	.414**	0.001	66
Restoring any educational material at any time raises my motivation to learn.	.598**	0	66
The class given by digitization motivates me.	.519**	0	66
IM	1		66
**. Correlation is significant at the 0.01 level (2-tailed).			
*. Correlation is significant at the 0.05 level (2-tailed).			

In Table (4.18) the data revealed that there a moderate and strong positive relationship between the second domain (External motivation towards the digitization of education in students) and encouraging our teachers to use digitization makes learning fun, the use of digitization encouraged the teacher to use groups in education, student parents encouraged him to use digitization in learning, using different types of learning educational activities encourage students to learn, when student see excellent students in the use of tablets it makes him to be like them, the use of tablets stimulates competition among students in the classroom, ignore everything the teacher says that uses digitization in teaching, encouraging the school administration to use digitization is more enthusiastic to use, replacing paper books with digital books makes me feel better than others in education, by use tablet student gained new skills important to him, joint work in digitization strengthens relationships with other students, the Digital Science Platform encourages students to participate in learning, tablets encouraged students to complete computer lesson, getting the test result immediately encourages students to use digitization, the method of digitization encourages students to study and school administration encourages teachers to use digitization.

Table 4.18 Pearson Correlation - External motivation towards the digitization in students

	EM		
	Pearson Correlation	Sig. (2-tailed)	N
Encouraging our teachers to use digitization makes learning fun.	.444**	0	66
The use of digitization encouraged the teacher to use groups in education.	.467**	0	66
My parents encouraged me to use digitalization in learning.	.460**	0	66
Using different types of learning educational activities encourage me to learn.	.685**	0	66
When I see excellent students in the use of tablets, it makes me to be like them.	.501**	0	66
The use of tablets stimulates competition among students in the classroom.	.503**	0	66
Ignore everything the teacher says that uses digitization in teaching.	.548**	0	66
Encouraging the school administration to use digitization is more enthusiastic to use.	.623**	0	66
Replacing paper books with digital books makes me feel better than others in education.	.580**	0	66
By use tablet, I gained new skills important to me.	.810**	0	66
Joint work in digitization strengthens relationships with other students.	.780**	0	66
The Digital Science Platform encourages me to participate in learning.	.672**	0	66
Educational activities in the digital book related to our daily activity.	-0.066	0.597	66
Tablets encouraged me to complete computer lesson.	.446**	0	66
Getting the test result immediately encourages me to use digitization.	.646**	0	66
The method of digitization encourages me to study.	.595**	0	66
School administration encourages teachers to use digitization.	.658**	0	66
School management provides environmental conditions in the school to use digitization.	0.203	0.102	66
EM	1		66
**. Correlation is significant at the 0.01 level (2-tailed).			
*. Correlation is significant at the 0.05 level (2-tailed).			

4.2.2. Factorial Analysis:

Cronbach's Alpha

Factor analysis was used to determine the structure validity of the scale. The following table Reliability Statistics Table (4.19) give us the information that the value of the coefficient Cronbach α for the scale of the research study is 0.890 = 89%. This percent gets over the 60 percent, which represents excellent value for the internal consistency of the notional structure of the exploratory scale. Coefficient of at least .60 is required to indicate an acceptable degree of reliability (Sekaran, 2004).

Table 4.19 Reliability Statistics

Cronbach's Alpha	N of Items
.890	36

Table (4.19 at its last column presents the coefficient Cronbach α of all the rest variables that remain and take part in the reliability analysis when this/ each specific item is missing from the scale.

Table 4.20 Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
The classes of digitization feel anxiety and tension.	149.15	279.515	.218	.892
My understanding and comprehension of the material decreases when using digitization	149.17	273.833	.438	.887
The method of digitization is difficult to teach.	149.35	270.231	.402	.888
I lack self-confidence to use my tablet.	151.76	310.340	-.429	.907
I accept the use of tablet devices, so I get special education to get high marks	148.82	279.782	.459	.888

The style of digitization helps me to rely on myself a lot.	149.14	269.935	.562	.885
The method of digitization encourages me to search for new subjects related to the lesson material.	148.89	280.404	.323	.889
The use of digitization teaches me the material deeper and easier.	149.09	270.484	.544	.885
Using digitization is an interesting and fun way to learn.	149.00	272.215	.583	.885
Failure in the digitization exam makes me insist on success in all other subsequent exams.	149.59	258.984	.606	.883
Tablet use encourages me to use the Internet in education.	149.08	270.810	.562	.885
My educational activities collectively give me happiness and pleasure.	148.88	279.431	.380	.888
I'm constantly training to use the tablet.	149.74	280.563	.332	.889
Using interactive boards is very easy.	149.29	272.916	.481	.886
I use the computer whenever I have the opportunity.	149.39	284.304	.177	.891
I follow all that is new in digitization education.	149.55	279.452	.354	.889
Restoring any educational material at any time raises my motivation to learn.	149.09	267.807	.626	.884
I am motivated by the class given by digitization.	149.00	269.846	.616	.884
Encouraging our teachers to use digitization makes learning fun.	148.86	278.550	.360	.888
The use of digitization encouraged the teacher to use groups in education.	149.82	282.674	.182	.892
My parents encouraged me to use digitization in learning.	149.70	276.061	.366	.888
Using different types of learning educational activities encourage me to learn.	149.06	272.550	.568	.885
When I see excellent students in the use of tablets it makes me to be like them.	148.94	274.150	.500	.886
The use of tablets stimulates competition among students in the classroom.	150.05	275.983	.304	.890
Ignore everything the teacher says that uses digitization in teaching.	149.24	269.694	.412	.888

Encouraging the school administration to use digitization is more enthusiastic to use.	149.09	268.115	.536	.885
Replacing paper books with digital books makes me feel better than others in education.	149.20	265.699	.645	.883
By use tablet I gained new skills important to me.	149.11	265.727	.700	.883
Joint work in digitization strengthens relationships with other students.	149.12	265.616	.653	.883
The Digital Science Platform encourages me to participate in learning.	149.06	272.304	.544	.886
Educational activities in the digital book are related to our daily activity.	149.70	287.168	.063	.893
Tablets encouraged me to complete computer lesson.	149.82	281.474	.254	.890
Getting the test result immediately encourages me to use digitization.	149.32	262.836	.712	.882
The method of digitization encourages me to study.	149.03	275.907	.524	.886
School administration encourages teachers to use digitization.	148.98	273.277	.536	.886
School management provides environmental conditions in the school to use digitization.	149.62	287.624	.074	.892

From the last column in Table (4.20) it is evident that if any item deleted from the reliability scale, the coefficient Cronbach α will get the smallest value of 0.602 rather than deleting the item question (The nature of curriculum design does not encourage the use of digitization in a good or effective form.) increase in value of Cronbach α to be 0.907. Therefore, as there benefit in case the specific item deleted, it is preferable to maintain all items at the scale.

Tukey's Test for Nonadditivity

The Tukey's Test for Nonadditivity evaluates the zero hypothesis Ho that is that the scale presents additivity. The Table (4.21) below for no additivity (ANOVA with Tukey's Test for Nonadditivity) indicates a relatively observatory level of statistical significance and therefore the Ho is characterized as acceptable, which means that the model has additivity.

Table 4.21 ANOVA with Tukey's Test for Nonadditivity

			Sum of Squares	df	Mean Square	F	Sig
Between People			523.999	65	8.062		
Within People	Between Items		631.920	35	18.055	20.451	.000
	Residual	Nonadditivity	65.298[a]	1	65.298	76.416	.000
		Balance	1943.143	2274	.855		
		Total	2008.441	2275	.883		
	Total		2640.361	2310	1.143		
Total			3164.360	2375	1.332		
Grand Mean = 4.27							
a. Tukey's estimate of power to which observations must be raised to achieve additivity = -1.920.							

4.2.3. Hypotheses Testing:

In order to test study hypotheses (Mean Analysis, Eta Squared, Analysis of Variances, Independent Sample Test, and Nonparametric tests) will be used. The investigation focused on internet motivation and external motivation over demographic variable and Blooms Taxonomy total exam result.

From Table (4.22) We conclude that The role of the of internal motivation, external motivation and total motivation over the exam results for all students using digitization in education, The significant level of the four domain .045, .01 and 0.007 is less than the statistical significance level of 0.05 indicating that the null hypothesis rejected and accept the alternative hypothesis which is mean that there is significant difference between the internal motivation, external motivation, total motivation and achievement test result.

Table 4.22 ANOVA between the internal motivation, external motivation and exam result

			Sum of Squares	df	Mean Square	F	Sig.
IM * Bloom's-Taxonomy total marks	Between Groups	(Combined)	4.951	12	.413	1.983	.045
	Within Groups		11.026	53	.208		
	Total		15.977	65			
EM * Bloom's-Taxonomy total marks	Between Groups	(Combined)	7.109	12	.592	2.542	.010
	Within Groups		12.350	53	.233		
	Total		19.459	65			
TOTAL_M * total marks	Between Groups	(Combined)	5.470	12	.456	2.659	.007
	Within Groups		9.085	53	.171		
	Total		14.556	65			

However, Table (4.22) Eta squared η^2 (part of the *r* family of effect sizes, and an extension of *r*2 that can be used for more than two sets of observations) measures the proportion of the variation in total marks that is associated with membership of the different groups defined by internal motivation, external motivation and total motivation or the sum of squares of The role divided by the total sum of squares:

$$n^2 = \frac{SS_{\text{effect}}}{SS_{\text{total}}}$$

Table 4.23 eta squared Measures of Association

	Eta	Eta Squared
IM * Bloom's-Taxonomy total marks	.557	.310
EM * Bloom's-Taxonomy total marks	.604	.365
TOTAL_M * total marks	.613	.376

η^2 of 0.310 means that 31% of the total variance can be accounted for the internal motivation over total marks, η^2 of 0.365 means that 36.5% of the total variance can be accounted for the external motivation over total marks and η^2 of 0.376 means that 37.6% of the total variance can be accounted for the external motivation over total marks.

Table (4.24) Mann-Whitney U Test shows that the differences between the mean ranks are statistically significant in the distribution of internal motivation, external motivation and total motivation gender also the mean rank of female greater than the mean rank of male in the three hypothesis.

Table 4.24 Mann-Whitney U Test Summary based on gender

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of IM is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
2	The distribution of EM is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
3	The distribution of TOTAL_M is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
Asymptotic significances are displayed. The significance level is .05.				

Table (4.25 Mann-Whitney) U Test shows that the differences between the mean ranks are statistically significant in the distribution of comprehension, analysis, application, synthesis, evaluation and Blooms-Taxonomy total marks across students gender also the mean rank of female greater than the mean rank of male in all hypotheses.

Table 4.25 Mann-Whitney U Test Summary based on gender

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Knowledge is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.077	Retain the null hypothesis.
2	The distribution of Comprehension is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.024	Reject the null hypothesis.

3	The distribution of Analysis is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.001	Reject the null hypothesis.
4	The distribution of Application is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.001	Reject the null hypothesis.
5	The distribution of Synthesis is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.013	Reject the null hypothesis.
6	The distribution of Evaluation is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.023	Reject the null hypothesis.
7	The distribution of Bloom's-Taxonomy total marks is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
Asymptotic significances are displayed. The significance level is .05.				

4.3. Teachers' attitudes Statistics

4.3.1. Demographic Features of Participants

In Table (4.26), the data revealed that 40% of 10 respondent in the study are male and 60% are female. The qualifications for the respondent were categorized to 80% of the respondent have bachelor degree and 20% have a master degree. The years of experience of the respondent have been categorized as 20% of the respondent have less than 5% of experience, 20% from 5 – 10 years of experience, and 60% more than 15 years of experience. In addition, the data revealed that the 50% of the teachers teach in female school and 50% of them are teach in male school. The place of schools are classified as 80% of the schools in the city and 20% of the schools in villages. The number of training courses that the teacher received in the area of digitization are classified as 50% of the teacher's take 1 – 2 training courses and 50% of them take more than three training courses.

Table 4.26 Demographic Distribution of Participants (N=10)

Demographic Features		Frequency	Percent
Gender	Male	4	40.0
	Female	6	60.0

Qualification	Bachelor degree	8	80.0
	Master degree	2	20.0
Years of Experience	Less than 5 years	2	20.0
	From 5 years to 10 years	2	20.0
	More than 15 years	6	60.0
Gender Of school	Males	5	50.0
	Female	5	50.0
Place of the school	Town	8	80.0
	Village	2	20.0
Number of training courses that the teacher received in the area of digitization	1-2 training courses	5	50.0
	More than 3 training courses	5	50.0
Specialization	Biology	6	60.0
	Chemistry	3	30.0
	Physics	1	10.0
	Yes	24	16.7

4.3.2. Descriptive Statistics for the questionnaire

The data in Table (4.27) shows that all the teachers mean in average equal 3.83 and this mean all the teachers respondent to this survey are want to use digitization in education but to check the reality of the sentences we use the range to check the best description of all sentence that the teachers response to it via the survey.

To determine the minimum and the maximum length of the 5-point Likert type scale, the range is calculated by (5 − 1 = 4) then divided by five as it is the greatest value of the scale (4 ÷ 5 = 0.80). Afterwards, number one which is the least value in the scale was added in order to identify the maximum of this cell. The length of the cells is determined below:

- From 1 to 1.80 represents (Never).
- From 1.81 until 2.60 represents (Scarcely).
- From 2.61 until 3.40 represents (Sometimes).
- From 3:41 until 4:20 represents (Frequently).
- From 4:21 until 5:00 represents (Always).

The data in Table (4.27) describe the respondent of the teacher in the four domains of the survey, at the first domain that design to deals with The role of the use of digitization on the motivation and achievement of student's results represented as follow:

1. The mean of the sentence related to use of digitization in science education leads to distracting students' minds from the content of education equal 3.3 with standard deviation equal 0. 949 and range of the answers = 3 which is mean The role of this sentence is sometimes effect of the use of digitization on the motivation and achievement of students from the point of view of teachers.
2. The mean of the sentence related to use of digitization in science education leads to distracting students' minds from the content of education. Equal 3.3 with standard deviation equal 0. 949 and range of the answers = 2 which is mean The role of this sentence is scarcely effect of the use of digitization on the motivation and achievement of students from the point of view of teachers.
3. The mean of the sentence related to use of digitization in education limits the growth and visibility of learners' creativity and innovation equal 3.6 with standard deviation equal 1. 075 and range of the answers = 3 which is mean The role of this sentence is sometimes effect of the use of digitization on the motivation and achievement of students from the point of view of teachers.
4. The mean of the sentence related to students dislike my material if they resort to using digitization in education equal 4.3 with standard deviation equal 1. 059 and range of the answers = 3 which is mean The role of this sentence is sometimes effect of the use of digitization on the motivation and achievement of students from the point of view of teachers.
5. The mean of the sentence related to poor training of students on computer use weakens the use of digitization in teaching equal 3.10 with standard deviation equal 0. 738 and range of the answers = 2 which is mean the effect of this sentence is scarcely effect of the use of digitization on the motivation and achievement of students from the point of view of teachers.

6. The mean of the sentence related to large number of students in the classroom hinders the use of digitization in education equal 3.90 with standard deviation equal 1.197 and range of the answers = 4 which is mean the effect of this sentence is frequently effect of the use of digitization on the motivation and achievement of students from the point of view of teachers.
7. The mean of the sentence related to use of digitization develops the student's ability to communicate and communicate equal 4.3 with standard deviation equal 0.675 and range of the answers = 2 which is mean the effect of this sentence is scarcely effect of the use of digitization on the motivation and achievement of students from the point of view of teachers.
8. The mean of the sentence related to using the digitization method, we keep attracting students' attention equal 4.3 with standard deviation equal 0.483 and range of the answers = 1 which is mean the effect of this sentence is never effect of the use of digitization on the motivation and achievement of students from the point of view of teachers.
9. The mean of the sentence related to Students keep information longer when using digitization is equal 4.4 with standard deviation equal 0.516 and range of the answers = 1 which is mean the effect of this sentence is never effect of the use of digitization on the motivation and achievement of students from the point of view of teachers.
10. The mean of the sentence related to use of digitization in the teaching of science increases the motivation of students to learn equal 4.6 with standard deviation equal 0.516 and range of the answers = 1 which is mean the effect of this sentence is never effect of the use of digitization on the motivation and achievement of students from the point of view of teachers.
11. The mean of the sentence related to using digitization in education, students share work equal 4 with standard deviation equal 0.816 and range of the answers = 2 which is mean the effect of this sentence is scarcely effect of the use of digitization on the motivation and achievement of students from the point of view of teachers.
12. The mean of the sentence related to accreditation of digitization in science education helps to take in consideration the individual differences between students equal 4.3 with standard deviation equal 0.675 and range of the answers = 2 which is mean the effect of this sentence is scarcely effect of the use of digitization on the motivation and achievement of students from the point of view of teachers.

13. The mean of the sentence related to use of digitization in teaching science as an enhanced factor towards learning equal 4.8 with standard deviation equal 0.422 and range of the answers = 1 which is mean the effect of this sentence is never effect of the use of digitization on the motivation and achievement of students from the point of view of teachers.
14. The mean of the sentence related to use of digitization in science education enhances student independence and self-reliance equal 4.10 with standard deviation equal 0.568 and range of the answers = 2 which is mean the effect of this sentence is scarcely effect of the use of digitization on the motivation and achievement of students from the point of view of teachers.
15. The mean of the sentence related to keep away from using digitization in education because it requires a lot of pre-scientific preparation of the lesson material equal 4.0 with standard deviation equal 0. 943 and range of the answers = 3 which is mean the effect of this sentence is sometimes effect the views of teachers who respond to the use of digitization of education.
16. The mean of the sentence related to use of digitization raises chaos among students equal 3.7 with standard deviation equal 0.675 and range of the answers = 2 which is mean the effect of this sentence is scarcely effect the views of teachers who respond to the use of digitization of education.
17. The mean of the sentence related to use of digitization reduces the value of the teacher to students as a primary Al-Athraa source of information equal 4.5 with standard deviation equal 0.707 and range of the answers = 2 which is mean the effect of this sentence is scarcely effect the views of teachers who respond to the use of digitization of education.
18. The mean of the sentence related to the weakness of teachers ' desire to use digitization to a need to time, effort and efficiency equal 3 with standard deviation equal 1.054 and range of the answers = 3 which is mean the effect of this sentence is sometimes affect the views of teachers who respond to the use of digitization of education.
19. The mean of the sentence related to the weak training of teachers in digitization teachers away from the use of digitization in education equal 3.3 with standard deviation equal 0.823 and range of the answers = 2 which is mean the effect is scarcely effect the views of teachers who respond to the use of digitization of education.

20. The mean of the sentence related to use The method of digitization encourages students to participate actively equal 4.4 with standard deviation equal 0.516 and range of the answers = 1 which is mean the effect is never affect the views of teachers who respond to the use of digitization of education.
21. The mean of the sentence related to use of digitization of education fills the gap in the teaching of science equal 3.9 with standard deviation equal 0.876 and range of the answers = 3 which is mean the effect is sometimes affect the views of teachers who respond to the use of digitization of education.
22. The mean of the sentence related to use of digitization in science teaching helps to change the teacher's role from a teacher to a mentor equal 4.2 with standard deviation equal 0.919 and range of the answers = 3 which is mean the effect is sometimes affect the views of teachers who respond to the use of digitization of education.
23. The mean of the sentence related to use of digitization in science teaching helps to change the teacher's role from a teacher to a mentor equal 3.8 with standard deviation equal 0.632 and range of the answers = 2 which is mean the effect is scarcely effect the views of teachers who respond to the use of digitization of education.
24. The mean of the sentence related to digitization has been adopted in education despite the lack of adequate material resources equal 3.8 with standard deviation equal 0.632 and range of the answers = 2 which is mean the effect is scarcely effect the views of teachers who respond to the use of digitization of education.
25. The mean of the sentence related to use digitization in learning to keep up with other colleagues so that I'm not the least of them equal 3.6 with standard deviation equal 1.265 and range of the answers = 3 which is mean the effect is sometimes affect the views of teachers who respond to the use of digitization of education.
26. The mean of the sentence related to digitization in teaching enables students to diversify learning resources equal 4.1 with standard deviation equal 0.738 and range of the answers = 2 which is mean the effect is scarcely effect the views of teachers who respond to the use of digitization of education.
27. The mean of the sentence related to My lack of knowledge of digitization keeps me away from using it equal 3.7 with standard deviation equal 1.160 and range of the answers = 3 which is mean the effect is sometimes affect the views of teachers who respond to the use of digitization of education.

28. In the 3rd domains related to the means and methods that describe the concerned with the reasons and reasons for the use of digitization of education in science from the point of view of the respondents rang of the sentences 1. The use of digitization in education without good preparation fails to achieve the desired goals; 2. The use of tablet devices provides time and effort; 3. I judge the efficiency of education in the institution through the availability of digitization devices and 4. The use of digitization in science education improves the quality of teaching have sometimes effect.
29. Also, in the 4th domain related to the curriculum rang of the sentences 1. The nature of curriculum design does not encourage the use of digitization in a good or effective form and 2. The momentum of the curriculum weakens the use of digitization in education in depth have sometimes effect.

Table 4.27 Descriptive Statistics for the questionnaire 4 domains:

Statistics	N	Range	Min	Max	Mean	Standard deviation	Coefficient of variation
The first domain: Students: This topic deals with the effect of the use of digitization on the motivation and achievement of students from the point of view of teachers.							
The use of digitization in science education leads to distracting students' minds from the content of education.	10	3	2	5	3.30	.949	0.288
The use of digitization in science education negatively affects students' participation in-group work.	10	2	3	5	4.10	.876	0.214
The use of digitization in education limits the growth and visibility of learners' creativity and innovation.	10	3	2	5	3.60	1.075	0.299
Students dislike my material if they resort to using digitization in education.	10	3	2	5	4.30	1.059	0.246
Poor training of students on computer use weakens the use of digitization in teaching.	10	2	2	4	3.10	.738	0.238
The large number of students in the classroom hinders the use of digitization in education.	10	4	1	5	3.90	1.197	0.307

The use of digitization develops the student's ability to communicate and communicate.	10	2	3	5	4.30	.675	0.157
When using the digitization method, we keep attracting students' attention.	10	1	4	5	4.30	.483	0.112
Students keep information longer when using digitization.	10	1	4	5	4.40	.516	0.117
The use of digitization in the teaching of science increases the motivation of students to learn.	10	1	4	5	4.60	.516	0.112
When using digitization in education, students share work.	10	2	3	5	4.00	.816	0.204
Accreditation of digitization in science education helps to take in consideration the individual differences between students.	10	2	3	5	4.30	.675	0.157
The use of digitization in teaching science as an enhanced factor towards learning.	10	1	4	5	4.80	.422	0.088
The use of digitization in science education enhances student independence and self-reliance.	10	2	3	5	4.10	.568	0.139
The second domain (teachers): We focus on this axis on the views and views of teachers who respond to the use of digitization of education.							
Keep away from using digitization in education because it requires a lot of pre-scientific preparation of the lesson material.	10	3	2	5	4.00	.943	0.236
The use of digitization raises chaos among students.	10	2	3	5	3.70	.675	0.182
The use of digitization reduces the value of the teacher to students as a primary source of information.	10	2	3	5	4.50	.707	0.157
The weakness of teachers ' desire to use digitization to a need to time, effort, and efficiency.	10	3	1	4	3.00	1.054	0.351
Weak training of teachers in digitization teachers away from the use of digitization in education.	10	2	2	4	3.30	.823	0.249
Use The method of digitization encourages students to participate actively.	10	1	4	5	4.40	.516	0.117
The use of digitization of education fills the gap in the teaching of science.	10	3	2	5	3.90	.876	0.225

The use of digitization in science teaching helps to change the teacher's role from a teacher to a mentor.	10	3	2	5	4.20	.919	0.219
Digitization has been adopted in education despite the lack of adequate material resources.	10	2	3	5	3.80	.632	0.166
Use digitization in learning to keep up with other colleagues so that I am not the least of them.	10	3	2	5	3.60	1.265	0.351
Digitization in teaching enables students to diversify learning resources.	10	2	3	5	4.10	.738	0.180
My lack of knowledge of digitization keeps me away from using it.	10	3	2	5	3.70	1.160	0.314
The 3rd Domains Means and Methods: This topic is concerned with the reasons and reasons for the use of digitization of education in science from the point of view of the respondents....							
I avoid using digitization in education because it needs to be prepared in advance.	10	2	3	5	4.00	.816	0.204
The use of digitization in education without good preparation fails to achieve the desired goals.	10	3	1	4	1.90	.994	0.523
Students interact more when using tablets.	10	1	4	5	4.70	.483	0.103
The use of tablet devices provides time and effort.	10	3	2	5	4.10	.994	0.242
I judge the efficiency of education in the institution through the availability of digitization devices.	10	3	1	4	2.80	1.135	0.405
The use of digitization in science education improves the quality of teaching.	10	3	2	5	3.80	.919	0.242
I consider the interactive presentation of the best techniques used in the digitization of education.	10	1	4	5	4.20	.422	0.100
The use of digitization in science education is varied in teaching methods.	10	1	4	5	4.30	.483	0.112
The adoption of digitization in education is a development of the educational process with all its doors.	10	2	3	5	4.20	.632	0.150
The revenue from using digitization is less than the cost of using digitization.	10	3	1	4	3.40	.966	0.284

The fourth domain (Curriculum): This axis is concerned with the view of the responding teachers on the digitized curriculum.							
The nature of curriculum design does not encourage the use of digitization in a good or effective form.	10	3	1	4	2.40	1.265	0.527
The momentum of the curriculum weakens the use of digitization in education in depth.	10	3	1	4	2.60	1.075	0.413
Evaluation of the curriculum in a way that is somewhat remote from the fact that the learner is the focus of the educational process hinders the use of digitization to rely on the teacher in teaching.	10	1	3	4	3.30	.483	0.146
The design of the curriculum by digitization enhances the role of the learner in education.	10	2	3	5	4.20	.632	0.150

4.3.3. Test of Significance

Correlation Analysis

Pearson's correlation coefficient is a statistical measure of the strength of a linear relationship between paired data. In a sample, it is denoted by r and is by design constrained as follows:

$$-1 \leq r \leq 1$$

Furthermore:

- Positive values denote positive linear correlation;
- Negative values denote negative linear correlation;
- A value of 0 denotes no linear correlation;
- The closer the value is to 1 or –1, the stronger the linear correlation.

However, to conduct the test of significance like Independent Sample T-Test, Analysis of Variance (ANOVA) and the regression analysis we check the relationship between: (1) The role of the use of digitization on the motivation and achievement of students from the point of view of teachers. (2) The views of teachers who respond to the use of digitization of education. (3) The reasons for the use of digitization of education in science from the

point of view of the respondents. (4) The view of the responding teachers on the digitized curriculum.

In Table (2.28) the data revealed that there a very strong and positive relationship between the first domain (The role of the use of digitization on the motivation and achievement of students from the point of view of teachers) and the use of digitization in education limits the growth and visibility of learners' creativity and innovation, accreditation of digitization in science education helps to take in consideration the individual differences between students and The use of digitization in teaching science as an enhanced factor towards learning.

Table 4.28 Pearson Correlation for the effect of the use of digitization on the motivation and achievement of students from the point of view of teachers

	Pearson Correlation	Sig. (2-tailed)	N
The use of digitization in science education leads to distracting students' minds from the content of education.	0.538	0.108	10
The use of digitization in science education negatively affects students' participation in-group work.	0.496	0.145	10
The use of digitization in education limits the growth and visibility of learners' creativity and innovation.	.747*	0.013	10
Students dislike my material if they resort to using digitization in education.	0.508	0.134	10
Poor training of students on computer use weakens the use of digitization in teaching.	-0.3	0.4	10
The large number of students in the classroom hinders the use of digitization in education.	-0.43	0.213	10
The use of digitization develops the student's ability to communicate and communicate.	0.554	0.096	10
When using the digitization method, we keep attracting students' attention.	0.492	0.149	10
Students keep information longer when using digitization.	0.455	0.186	10
The use of digitization in the teaching of science increases the motivation of students to learn.	0.497	0.144	10
When using digitization in education, students share work.	0.301	0.398	10
Accreditation of digitization in science education helps to take in consideration the individual differences between students.	.797**	0.006	10
The use of digitization in teaching science as an enhanced factor towards learning.	.790**	0.006	10

The use of digitization in science education enhances student independence and self-reliance.	0.525	0.12	10
D1	1		10
*. Correlation is significant at the 0.05 level (2-tailed).			
**. Correlation is significant at the 0.01 level (2-tailed).			

In Table (4.29) the data revealed that there a moderate and strong positive relationship between the second domain (The views of teachers who respond to the use of digitization of education) and keep away from using digitization in education because it requires a lot of pre-scientific preparation of the lesson material and use the method of digitization encourages students to participate actively.

Table 4.29 Pearson Correlation for The views of teachers who respond to use digitization

	Pearson Correlation	Sig. (2-tailed)	N
Keep away from using digitization in education because it requires a lot of pre-scientific preparation of the lesson material.	.669*	0.035	10
The use of digitization raises chaos among students.	0.385	0.272	10
The use of digitization reduces the value of the teacher to students as a primary source of information.	0.279	0.436	10
The weakness of teachers ' desire to use digitization to a need to time, effort, and efficiency.	-0.486	0.155	10
Weak training of teachers in digitization teachers away from the use of digitization in education.	-0.22	0.541	10
Use The method of digitization encourages students to participate actively.	.702*	0.024	10
The use of digitization of education fills the gap in the teaching of science.	0.414	0.234	10
The use of digitization in science teaching helps to change the teacher's role from a teacher to a mentor.	0.369	0.295	10
Digitization has been adopted in education despite the lack of adequate material resources.	0.274	0.444	10
Use digitization in learning to keep up with other colleagues so that I am not the least of them.	0.399	0.254	10
Digitization in teaching enables students to diversify learning resources.	0.523	0.121	10
My lack of knowledge of digitization keeps me away from using it.	0.258	0.471	10
*. Correlation is significant at the 0.05 level (2-tailed).			
**. Correlation is significant at the 0.01 level (2-tailed).			

In Table (4.30) the data revealed that there a strong to very strong positive relationship between the third domain (The reasons for the use of digitization of education in science from the point of view of the teachers) and the use of digitization in education without good

preparation fails to achieve the desired goals, the use of digitization in science education improves the quality of teaching, the teacher consider the interactive presentation of the best techniques used in the digitization of education, the use of digitization in science education is varied in teaching methods and the adoption of digitization in education is a development of the educational process with all its doors.

Table 4.30 Pearson Correlation for the reasons for the use of digitization of education in science from the point of view of the teachers

	Pearson Correlation	Sig. (2-tailed)	N
I avoid using digitization in education because it needs to be prepared in advance.	0.53	0.115	10
The use of digitization in education without good preparation fails to achieve the desired goals.	.696*	0.025	10
Students interact more when using tablets.	0.141	0.698	10
The use of tablet devices provides time and effort.	0.454	0.188	10
I judge the efficiency of education in the institution through the availability of digitization devices.	0.321	0.366	10
The use of digitization in science education improves the quality of teaching.	.867**	0.001	10
I consider the interactive presentation of the best techniques used in the digitization of education.	.674*	0.033	10
The use of digitization in science education is varied in teaching methods.	.691*	0.027	10
The adoption of digitization in education is a development of the educational process with all its doors.	.694*	0.026	10
The revenue from using digitization is less than the cost of using digitization.	-0.275	0.442	10
D3	1		10
*. Correlation is significant at the 0.05 level (2-tailed).			
**. Correlation is significant at the 0.01 level (2-tailed).			

In Table (4.31) the data revealed that there strong to very strong and positive relationship between the fourth domain (The view of the responding teachers on the digitized curriculum) and the nature of curriculum design does not encourage the use of digitization in a good or effective form and the momentum of the curriculum weakens the use of digitization in education in depth.

Table 4.31 Pearson Correlation for the Purchasing Decision Phase

	Pearson Correlation	Sig. (2-tailed)	N
The nature of curriculum design does not encourage the use of digitization in a good or effective form.	.849**	0.002	10
The momentum of the curriculum weakens the use of digitization in education in depth.	.650*	0.042	10
Evaluation of the curriculum in a way that is somewhat remote from the fact that the learner is the focus of the educational process hinders the use of digitization to rely on the teacher in teaching.	0.5	0.141	10
The design of the curriculum by digitization enhances the role of the learner in education.	0.085	0.816	10
D4	1		10
*. Correlation is significant at the 0.05 level (2-tailed).			
**. Correlation is significant at the 0.01 level (2-tailed).			

4.3.4. Factorial Analysis:

Cronbach's Alpha

Factor analysis was used to determine the structure validity of the scale. The following table Reliability Statistics Table (4.32) give us the information that the value of the coefficient Cronbach α for the scale of the research study is 0.602 = 60.2%. This percent gets over the 60 percent, which represents a good value for the internal consistency of the notional structure of the exploratory scale. Coefficient of at least .60 is required to indicate an acceptable degree of reliability (Sekaran, 2004).

Table 4.32 Reliability Statistics

Cronbach's Alpha	N of Items
.602	40

Table (4.32) at its last column presents the coefficient Cronbach α of all the rest variables that remain and take part in the reliability analysis when this/ each specific item is missing from the scale.

Table 4.33 Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
The use of digitization in science education leads to distracting students' minds from the content of education.	149.90	62.767	.330	.578
The use of digitization in science education negatively affects students' participation in-group work.	149.10	63.878	.284	.584
The use of digitization in education limits the growth and visibility of learners' creativity and innovation.	149.60	56.489	.679	.533
Students dislike my material if they resort to using digitization in education.	148.90	61.433	.365	.572
Poor training of students on computer use weakens the use of digitization in teaching.	150.10	75.433	-.574	.649
The large number of students in the classroom hinders the use of digitization in education.	149.30	79.567	-.580	.680
The use of digitization develops the student's ability to communicate and communicate.	148.90	62.767	.505	.571
When using the digitization method, we keep attracting students' attention.	148.90	64.989	.437	.583
Students keep information longer when using digitization.	148.80	66.622	.206	.594
The use of digitization in the teaching of science increases the motivation of students to learn.	148.60	64.711	.439	.582
When using digitization in education, students share work.	149.20	63.511	.342	.580
Accreditation of digitization in science education helps to take in consideration the individual differences between students.	148.90	60.544	.726	.554
The use of digitization in teaching science as an enhanced factor towards learning.	148.40	64.933	.517	.582

The use of digitization in science education enhances student independence and self-reliance.	149.10	63.656	.513	.575
Keep away from using digitization in education because it requires a lot of pre-scientific preparation of the lesson material.	149.20	63.289	.296	.582
The use of digitization raises chaos among students.	149.50	64.500	.338	.583
The use of digitization reduces the value of the teacher to students as a primary source of information.	148.70	66.678	.125	.598
The weakness of teachers ' desire to use digitization to a need to time, effort, and efficiency.	150.20	81.067	-.714	.682
Weak training of teachers in digitization teachers away from the use of digitization in education.	149.90	70.322	-.172	.623
Use The method of digitization encourages students to participate actively.	148.80	61.289	.874	.557
The use of digitization of education fills the gap in the teaching of science.	149.30	59.567	.613	.552
The use of digitization in science teaching helps to change the teacher's role from a teacher to a mentor.	149.00	61.556	.432	.568
Digitization has been adopted in education despite the lack of adequate material resources.	149.40	64.267	.390	.581
Use digitization in learning to keep up with other colleagues so that I am not the least of them.	149.60	67.378	-.017	.619
Digitization in teaching enables students to diversify learning resources.	149.10	61.878	.534	.566
My lack of knowledge of digitization keeps me away from using it.	149.50	72.500	-.264	.645
I avoid using digitization in education because it needs to be prepared in advance.	149.20	63.289	.359	.578
The use of digitization in education without good preparation fails to achieve the desired goals.	151.30	63.344	.271	.584
Students interact more when using tablets.	148.50	65.611	.355	.587
The use of tablet devices provides time and effort.	149.10	62.100	.353	.575
I judge the efficiency of education in the institution through the availability of digitization devices.	150.40	68.489	-.061	.621
The use of digitization in science education improves the quality of teaching.	149.40	58.044	.695	.541

I consider the interactive presentation of the best techniques used in the digitization of education.	149.00	63.778	.693	.574
The use of digitization in science education is varied in teaching methods.	148.90	62.544	.765	.566
The adoption of digitization in education is a development of the educational process with all its doors.	149.00	61.556	.672	.561
The revenue from using digitization is less than the cost of using digitization.	149.80	74.178	-.390	.648
The nature of curriculum design does not encourage the use of digitization in a good or effective form.	150.80	80.178	-.581	.684
The momentum of the curriculum weakens the use of digitization in education in depth.	150.60	79.822	-.643	.677
Evaluation of the curriculum in a way that is somewhat remote from the fact that the learner is the focus of the educational process hinders the use of digitization to rely on the teacher in teaching.	149.90	66.322	.263	.592
The design of the curriculum by digitization enhances the role of the learner in education.	149.00	61.111	.719	.558

From the last column in Table (4.33) it is evident that if any item deleted from the reliability scale, the coefficient Cronbach α will get the smallest value of 0.602 rather than deleting the item question (The nature of curriculum design does not encourage the use of digitization in a good or effective form.) increase in value of Cronbach α to be 0.684. Therefore, as there benefit in case the specific item deleted, it is preferable to maintain all items at the scale.

Tukey's Test for Nonadditivity

The Tukey's Test for Nonadditivity evaluates the zero hypothesis Ho that is that the scale presents additivity. The Table (4.34) below for no additivity (ANOVA with Tukey's Test for Nonadditivity) indicates a relatively observatory level of statistical significance and therefore the Ho is characterized as acceptable, which means that the model has additivity.

Table 4.34 ANOVA with Tukey's Test for Nonadditivity

			Sum of Squares	df	Mean Square	F	Sig
Between People			15.440	9	1.716		
Within People	Between Items		161.640	39	4.145	6.078	.000
	Residual	Nonadditivity	10.912[a]	1	10.912	16.718	.000
		Balance	228.448	350	.653		
		Total	239.360	351	.682		
	Total		401.000	390	1.028		
Total			416.440	399	1.044		
Grand Mean = 3.83							
a. Tukey's estimate of power to which observations must be raised to achieve additivity = -4.065.							

4.3.5. Hypotheses Testing:

In order to test study hypotheses, analysis of variances (One-Way ANOVA) will be used. The investigation focused on the demographic variable over the four questionnaire domain. Whereas the variable tested for this study is to validate the influence of gender, qualifications, years of experience, gender of the school place of the school, number of training courses that the teacher received in the area of digitization and specialization on each questionnaire domain.

From Table (4.35) We conclude that the effect of the use of digitization on the motivation and achievement of students from the point of view of teachers, the views of teachers who respond to the use of digitization of education, the reasons for the use of digitization of education in science from the point of view of the respondents and The view of the responding teachers on the digitized curriculum. The significant level of the four domain .705, .553, .550 and .775 is greater than the statistical significance level of 0.05 indicating that the null hypothesis accepted and reject the alternative hypothesis which is mean that there is no significant difference between the 4 domain and the gender of the teacher.

Table 4.35 One-Way ANOVA between the 4 domain of teacher survey and teacher gender

		Sum of Squares	df	Mean Square	F	Sig.
The role of the use of digitization on the motivation and achievement of students from the point of view of teachers.	Between Groups	.025	1	.025	.272	.616
	Within Groups	.735	8	.092		
	Total	.760	9			
The views of teachers who respond to the use of digitization of education.	Between Groups	.029	1	.029	.502	.499
	Within Groups	.468	8	.058		
	Total	.497	9			
The reasons for the use of digitization of education in science from the point of view of the respondents	Between Groups	.169	1	.169	1.359	.277
	Within Groups	.995	8	.124		
	Total	1.164	9			
The view of the responding teachers on the digitized curriculum.	Between Groups	.039	1	.039	.132	.726
	Within Groups	2.367	8	.296		
	Total	2.406	9			

In Table (4.36) We conclude that the effect of the use of digitization on the motivation and achievement of students from the point of view of teachers, the views of teachers who respond to the use of digitization of education, the reasons for the use of digitization of education in science from the point of view of the respondents and The view of the responding teachers on the digitized curriculum. The significant level of the four domain 0.616, , 0.499, 0.277 and .726 is greater than the statistical significance level of 0.05 indicating that the null hypothesis accepted and reject the alternative hypothesis which is mean that there is no significant difference between the 4 domain and the teacher qualifications.

Table 4.36 One-Way ANOVA between the 4 domain of teacher survey and teacher qualifications

		Sum of Squares	df	Mean Square	F	Sig.
The role of the use of digitization on the motivation and achievement of students from the point of view of teachers.	Between Groups	.025	1	.025	.272	.616
	Within Groups	.735	8	.092		
	Total	.760	9			
The views of teachers who respond to the use of digitization of education.	Between Groups	.029	1	.029	.502	.499
	Within Groups	.468	8	.058		
	Total	.497	9			
The reasons for the use of digitization of education in science from the point of view of the respondents	Between Groups	.169	1	.169	1.359	.277
	Within Groups	.995	8	.124		
	Total	1.164	9			
The view of the responding teachers on the digitized curriculum.	Between Groups	.039	1	.039	.132	.726
	Within Groups	2.367	8	.296		
	Total	2.406	9			

In Table (4.37) We conclude that the effect of the use of digitization on the motivation and achievement of students from the point of view of teachers, the views of teachers who respond to the use of digitization of education, the reasons for the use of digitization of education in science from the point of view of the respondents and The view of the responding teachers on the digitized curriculum. The significant level of the four domain 0.688, , 0.334, 0.310 and .681 is greater than the statistical significance level of 0.05 indicating that the null hypothesis accepted and reject the alternative hypothesis which is mean that there is no significant difference between the 4 domain and the teacher experience.

Table 4.37 One-Way ANOVA between the 4 domain of teacher survey and teacher experience

		Sum of Squares	df	Mean Square	F	Sig.
The role of the use of digitization on the motivation and achievement of students from the point of view of teachers.	Between Groups	.077	2	.038	.394	.688
	Within Groups	.683	7	.098		
	Total	.760	9			
The views of teachers who respond to the use of digitization of education.	Between Groups	.134	2	.067	1.289	.334
	Within Groups	.363	7	.052		
	Total	.497	9			
The reasons for the use of digitization of education in science from the point of view of the respondents	Between Groups	.331	2	.165	1.389	.310
	Within Groups	.833	7	.119		
	Total	1.164	9			
The view of the responding teachers on the digitized curriculum.	Between Groups	.250	2	.125	.406	.681
	Within Groups	2.156	7	.308		
	Total	2.406	9			

In Table (4.38) We conclude that the effect of the use of digitization on the motivation and achievement of students from the point of view of teachers, the views of teachers who respond to the use of digitization of education, the reasons for the use of digitization of education in science from the point of view of the respondents and The view of the responding teachers on the digitized curriculum. The significant level of the four domain 0.616, , 0.680, 0.514 and .477 is greater than the statistical significance level of 0.05 indicating that the null hypothesis accepted and reject the alternative hypothesis which is mean that there is no significant difference between the 4 domain and the teacher schools gender.

Table 4.38 One-Way ANOVA between the 4 domain of teacher survey and teacher schools gender

		Sum of Squares	df	Mean Square	F	Sig.
The role of the use of digitization on the motivation and achievement of students from the point of view of teachers.	Between Groups	.025	1	.025	.272	.616
	Within Groups	.735	8	.092		
	Total	.760	9			
The views of teachers who respond to the use of digitization of education.	Between Groups	.011	1	.011	.183	.680
	Within Groups	.486	8	.061		
	Total	.497	9			
The reasons for the use of digitization of education in science from the point of view of the respondents	Between Groups	.064	1	.064	.465	.514
	Within Groups	1.100	8	.137		
	Total	1.164	9			
The view of the responding teachers on the digitized curriculum.	Between Groups	.156	1	.156	.556	.477
	Within Groups	2.250	8	.281		
	Total	2.406	9			

In Table (4.39) We conclude that the effect of the use of digitization on the motivation and achievement of students from the point of view of teachers, the views of teachers who respond to the use of digitization of education, the reasons for the use of digitization of education in science from the point of view of the respondents and The view of the responding teachers on the digitized curriculum. The significant level of the four domain 0.382, , 0.499, 0.872 and .477 is greater than the statistical significance level of 0.05 indicating that the null hypothesis accepted and reject the alternative hypothesis which is mean that there is no significant difference between the 4 domain and place of the school.

Table 4.39 One-Way ANOVA between the 4 domain of teacher survey and place of the school

		Sum of Squares	df	Mean Square	F	Sig.
The role of the use of digitization on the motivation and achievement of students from the point of view of teachers.	Between Groups	.073	1	.073	.857	.382
	Within Groups	.686	8	.086		
	Total	.760	9			
The views of teachers who respond to the use of digitization of education.	Between Groups	.029	1	.029	.502	.499
	Within Groups	.468	8	.058		
	Total	.497	9			
The reasons for the use of digitization of education in science from the point of view of the respondents	Between Groups	.004	1	.004	.028	.872
	Within Groups	1.160	8	.145		
	Total	1.164	9			
The view of the responding teachers on the digitized curriculum.	Between Groups	.156	1	.156	.556	.477
	Within Groups	2.250	8	.281		
	Total	2.406	9			

In Table (4.40) We conclude that the effect of the use of digitization on the motivation and achievement of students from the point of view of teachers, the views of teachers who respond to the use of digitization of education, the reasons for the use of digitization of education in science from the point of view of the respondents and The view of the responding teachers on the digitized curriculum. The significant level of the four domain 0.943, , 0.533, 1.000 and .182 is greater than the statistical significance level of 0.05 indicating that the null hypothesis accepted and reject the alternative hypothesis which is mean that there is no significant difference between the 4 domain and the number of training courses that the teachers takes .

Table 4.40 One-Way ANOVA between the 4 domain of teacher survey and number of training courses that the teachers takes

		Sum of Squares	df	Mean Square	F	Sig.
The role of the use of digitization on the motivation and achievement of students from the point of view of teachers.	Between Groups	.001	1	.001	.005	.943
	Within Groups	.759	8	.095		
	Total	.760	9			
The views of teachers who respond to the use of digitization of education.	Between Groups	.025	1	.025	.424	.533
	Within Groups	.472	8	.059		
	Total	.497	9			
The reasons for the use of digitization of education in science from the point of view of the respondents	Between Groups	.000	1	.000	.000	1.000
	Within Groups	1.164	8	.146		
	Total	1.164	9			
The view of the responding teachers on the digitized curriculum.	Between Groups	.506	1	.506	2.132	.182
	Within Groups	1.900	8	.238		
	Total	2.406	9			

In Table (4.41) We conclude that the effect of the use of digitization on the motivation and achievement of students from the point of view of teachers, the views of teachers who respond to the use of digitization of education and the reasons for the use of digitization of education in science from the point of view of the respondents. The significant level of the four domain 0.779, , 0.657, 0.319 is greater than the statistical significance level of 0.05 indicating that the null hypothesis accepted and reject the alternative hypothesis which is mean that there is no significant difference between the first three domain and specialization.

But there is a significant difference between the views of the responding teachers on the digitized curriculum and specialization.

Table 4.41 One-Way ANOVA between the 4 domain of teacher survey and teachers specialization

		Sum of Squares	df	Mean Square	F	Sig.
The role of the use of digitization on the motivation and achievement of students from the point of view of teachers.	Between Groups	.052	2	.026	.258	.779
	Within Groups	.707	7	.101		
	Total	.760	9			
The views of teachers who respond to the use of digitization of education.	Between Groups	.056	2	.028	.446	.657
	Within Groups	.441	7	.063		
	Total	.497	9			
The reasons for the use of digitization of education in science from the point of view of the respondents	Between Groups	.324	2	.162	1.350	.319
	Within Groups	.840	7	.120		
	Total	1.164	9			
The view of the responding teachers on the digitized curriculum.	Between Groups	1.437	2	.719	5.194	.041
	Within Groups	.969	7	.138		
	Total	2.406	9			

CHAPTER FIVE:

Discussion of Results and Recommendations

This chapter includes a discussion of the findings, after the data were collected by the study tools and processed statistically according to the study's questions. The study aimed at identifying the effect of use digitization on the achievement of sixth grade students in the unit of the human organs, and their motivation to use digitization on learning science in Bethlehem government schools.

5.1. Discussion of the results of the first question

What is The Role of Using the Digitization on Achievement of sixth grade students in the unit of the human organs?

The following hypotheses emerged:

1. "Digitization reveals better positive effects on achievements than Normal teaching does."

As shown in Table (4.2), the mean of experimental sample (17.3788) is little higher than the mean of the control sample (16.7500), and the significance of test (t), which is (0.349) is greater than the level of significance (0.05). Therefore, the results of this hypothesis indicate that there is no significant statistical difference in the achievement test due to the effect of the method used in teaching sixth grade students when compared to the four schools.

Moreover, this result agrees with the result of previous studies such as (Grubišic, Stankov, Rosic, Z itko, 2009), (Sowunmi, and Aladejana, 2013) and (Al Jowair, 2008)
It is noted that this result was not agreed with the results of previous studies, which indicated the effectiveness of digitization on students' achievement, such as (Soyibo, K & Hudson, 2000), (Akcay, Husamettin, Feyzioglu, Burak & Tuysuz, Cengiz, 2003), (Borstorff & Lowe, 2006), (Chang, 2002), (Kurbanoglu, Taskesenligil & Sozbilir, 2006), (Uhumuavbi & Mamudu, 2009), (Owusu, Wilmot, & Monney, 2010) and (Shatat, Aldalalah, & Ababneh, 2017).

From another side, the analysis of schools' achievement, Table (4.5) shows that there are a statistically significant difference of students' achievement for the experimental girl's sample. It seems that there is a problem on the experimental boys' sample. There could be many reasons for that, such as teachers' capability to use ICT, the way of teaching the digitization curriculum, the test circumstances as the students taught that the test will not effect on their academic record... etc., taking into account that the sample was selected to be equivalent on the last semester marks.

2. "Digitization reveals better positive effects on educational learning objectives than Normal teaching does."

One-Way ANOVA was applied on the Achievement test. Table (4.4) shows and explains blooms Taxonomy significant level with all schools either using digitize education or not. It concludes that the mean Analysis, Synthesis and Application are significantly different for at least one of the schools using digitization groups (F Analysis, 118= 5.345, $p < 0.002$), (F Synthesis, 118= 5.256, $p < 0.002$) and (F Application, 118= 8.045, $p < 0.000$). Tukey post-hoc tests and Mann-Whitney U test were used to clarify the difference between schools that meet the Bloom's Taxonomy objectives as shown in tables 4.5, 4.6, 4.7, 4.8. Therefore, digitization schools are statistically significant on **Analysis, Synthesis, and Application** and in favor of the girls' schools.
Interestingly, the objectives in which digitization appears to affect are:

- **Analysis:** It involves examining and breaking information into component parts, determining how the parts relate to one another, identifying motives or causes, making inferences, and finding evidence to support generalizations.
- **Synthesis:** It involves building a structure or pattern from diverse elements; it also refers to the act of putting parts together to form a whole
- **Application:** It involves using acquired knowledge—solving problems in new situations by applying acquired knowledge, facts, techniques, and rules.

This result can be explained by the use of digitization students in the delivery of information, in contrast to the use of Normal method with the control group in the delivery of information. (Al-Za'anin, 2007) noted that Normal teaching increases students' achievement, but in a less manner than computerized learning. The Normal method of teaching is concerned with remembering and understanding information, but does not apply and analysis information on same extent.

This finding may also be attributed to the fact that the use of digitization in teaching falls under the constructivist theory of self-learning. According to this theory, the student builds the scientific knowledge himself/herself. This will be provided by computer simulation, which helped students to be prepared psychologically, and raise their previous knowledge; in addition to the exposure to new scientific knowledge that challenges their previous cognitive structures, which reflected positively on their academic achievement.

This result may also be attributed to the fact that the nature of digitization imposes students to progress in learning based on logical and sequential steps according to their abilities and characteristics. This can facilitate the process of learning, and may help to form logical thinking habits. Additionally, digitization provides sufficient time for an uneducated student to progress in his/her learning to the extent that is appropriate to his/her potential and speed of learning. One of the reasons for the effective use of computerized educational activities in achievement is the novelty of this method of teaching, the way in which the content of the program is organized, the mechanism in which it is presented, and the existing educational activities, which raise students' motivation and curiosity.

Moreover, this result agrees with the result of previous studies such as: (Al-Qarni, 2006) The results of the study were as follows: There were statistically significant differences

between the mean scores of the experimental and control groups The collection of scientific concepts in the post-application of the achievement test at the three levels (remembering, Understanding, and application) in favor of the experimental group. And (Al-Sharhan, 2000) There were statistically significant differences in the second and third cognitive level (level of understanding and level of application) between the experimental group and the control group in favor of the experimental group.

It is noted that this result was not in agreement with the results of previous studies such as (Al-Mutairi, 1998). The results of the study were as follows: There were statistically significant differences in the average achievement of students in science between the experimental and control groups for the experimental group at the level of remembering and understanding. No differences were statistically significant at the level of application in both groups, and (Khalid, 2008) The results of the study were as follows: there are no significant differences in educational achievement in the post-measurement in knowledge, memory, understanding, comprehension, composition and the total degree of achievement between the control and experimental groups.

5.2. Discussion of the results of the second question

What is the role of use digitization on the motivation of sixth grade students on learning science?

The following hypotheses emerged:

3. “Digitization shows better positive effects on learning motivation.”

Based on tables 4.17 and 4.18, the results of the study indicate that there is a strong positive association in the students' attitudes to learning using digitization, both at the level of internal and external motivation.

This result can be attributed to the fact that the use of digitization as a new and exciting teaching method is working to increase the student's motivation to learn by bursting his

creative energies and removing him from the burdens and routines prevalent in the Normal teaching process.

The learner's motivation for learning is a psychologically important factor of importance if the learner's motivation to learn is no less important than his or her rational ability, because without motivation the learner will make no effort even if he is able to understand and collect marks. The learner's direction towards learning drives him to exert more effort and energy to learn, so many educators sought to create a positive trend in the student towards learning using new and exciting teaching methods.

The results of the study are in line with what the Schengen study noted, where the results of the study show that educational and computer programs (Cheng et al., And others, 2015) increase students' motivation for learning and illustrate many vague points in science learning from the point of view of teachers. The results of the study show that those who learn through educational programs have shown greater interest in science learning and have increased their knowledge, depth, and direction. They also agree with (M.-H. Lin et al. 2017), (Broussad, 2002), Shatat, Aldalalah, & Ababneh, 2017), (Cheng, She, & Lin,2015), (Kryzek & Christensen, 2015) which indicated that there were statistically significant differences in the test of the trend towards science in the post-measurement in favor of the experimental group, which indicated that the good application of such software is based on the teacher's ability to apply and activate it in the classroom and in agree with the study of (Milner, Leverenz, & Powell, Leferns and Boyle) where there results show that students have improved information and understanding about science using educational software.

The results of the study differ with what the study of (Gonen, Kocakaya & Inan, 2006) which indicated that students' attitudes were not affected by the teaching method.

The fourth hypothesis

4. “Learning motivation presents significantly positive effects on learning outcome for Digitization students.”

Based on the result of Table (4.22) which conclude the effect of the of both the internal motivation and external motivation over the exam results for students using digitizing in education, The significant level of the four domain .045, .01 and 0.007 which indicating that there is significant difference between the internal motivation, external motivation, total motivation and exam result. And this result agree with Abdul Hadi's study (2003) where the study indicates that there is a positive and positive relationship between academic achievement and motivation towards learning in the post-measurement for the benefit of the experimental group.

The results show a correlation between the educational achievement of the experimental group and their attitudes toward science, most educators agree that the quality of students' attitudes toward the subject they are learning affects their academic achievement, therefore, one of the most important objectives of teaching any subject is to develop positive student attitudes towards that subject.

In order to become more enthusiastic and willing to make the effort to learn and increase motivation to study, the use digitization of the students in the experimental group raised their levels of achievements and allow most of them to succeed in learning the subject, and by facilitating the learning situation and giving them an opportunity to check their progress, thus contributing to reducing their sense of shame or failure which yield strengthened their internal motivation.

To measure the effect of the independent variable (digitization) on the dependent variable (academic achievement), the η^2 (Eta squared) where Table (4.23) show that for the internal motivation over total marks; η^2 is 0.310 which means that 31% of the total variance can be accounted for the internal motivation over total marks, external motivation over total marks η^2 is 0.365 means that 36.5% of the total variance can be accounted for the external motivation over total marks and η^2 for overall motivation over total marks is 0.376 means

that 37.6% of the total variance can be accounted for the external motivation over total marks.

The results of Mann-Whitney U Test based on gender in Table (4.24) show that the mean rank of the female greater than the mean rank of male in the internal motivation and the external motivation and also for the role of the motivation on the achievements based on bloom Taxonomy as shown on Table (4.25).

The results of the examination showed that females have a marked superiority over males, and according to the views of specialists in the field of education females are characterized by males study, and this is an actual result gained from their activity and their love for reading, the female teachers and principals follow patterns of behavior that stimulate learning more than their male counterparts, they have more functional satisfaction, have higher qualifications, build better relationships with their students, and are more responsive to duties, there is also "positive competition between female school principals", not much of it among male schools, which is reflected in the level of student achievement compared to students.

5.3. Discussion of the results of the third question

What are the attitudes of science teachers of the 6th graders in Bethlehem towards the use of digitization as an educational tool?

By comparing the arithmetic averages of teachers 'responses to each of the questionnaires for trends and for each field in Table (4.5). Teachers' attitudes in the four areas were positive for using digitization as an instructional tool in teaching science, and the overall score of their responses to all paragraphs of the questionnaire Table (4.27) indicating that teachers' attitudes were also positive towards the use of digitization as an instructional tool in teaching science, It also shows that the attitudes of science teachers towards the use of digitization as an educational tool in teaching science are positive, regardless of the gender, qualification or years of experience. This encourages the use of these positive trends in the use of computers in teaching as an effective teaching method to improve the learning process and its outcomes.

The results of this study were agreed with the study of (Cheng, She & Lin, 2015); the results of the study show that educational and computer programs increase students' motivation for learning and illustrate many of the ambiguous points in learning science from the point of view of teachers.

The result were disagreed with (Ching, Kong, Cheng & So, 2014), which show that teachers find many difficulties in using and providing educational software in science education.

5.4. Recommendations of the study

5.4.1. Recommendations for teachers

The study recommends that teachers adopt the use of digitization in education as a method, method or means of education, as it leads to increasing students' attraction to the content, and increase their motivation and interaction with the educational material reflected on their performance and thus on their achievement, and invites teachers to learn about the new technology in education And developing self-skills in this field.

5.4.2. Recommendations to the Ministry of Education

- Working to improve the technological infrastructure to allow and disseminate electronic content in line with the global trends in the employment of digitizing and its applications as a basic component of the education system in Palestine.
- Expanding the dissemination of the culture of digitizing among the segments of Palestinian society.

- The development of digitizing as a basic tool for faculty members in the educational process in terms of teaching content, evaluating students and providing scientific research.
- Develop appropriate mechanisms to measure the use of electronic content and develop plans that are appropriate to the nature of Palestinian and Arab society to increase the effectiveness of the use of this content in Palestinian educational institutions.
- Pay attention to the training processes in the fields of design and development of electronic content in the specialists in the field adopting sources of electronic information as a main source in the development of scientific research among researchers and faculty members.
- The establishment of specialized centers in the training of human cadres of specialists and members of the teaching staff in the use of digital applications in the field of education.
- Include teacher-training programs in colleges and institutes with advanced courses in the design of computerized activities and methods of employment in the teaching and learning.

  We need to apply the digitization program of education at a younger age from which adopted by the Ministry of Education right now, to achieve the impact we looking for to improve the quality of education, especially in male schools.

5.4.3. Recommendations to the Directorate of Education Bethlehem

- Appointing qualified teachers and give them continuous training commensurate with the program digitization of education on Salah Al-Dien Primary School for Boys.

5.4.4. Recommendations for researchers:

- Conduct other studies similar to this study in classrooms, educational stages and other study units.
- Conducting comparative studies between computer use in education and other teaching methods followed in teaching.
- Studying other factors that may influence teachers' attitudes towards computer use in teaching, such as the ability of teachers to use computers and produce computer education programs.

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Appendices

Appendix(1)

The Internet is one of the most important sources of communication between the Ministry and the government schools and schools in Palestine. It connects schools through the e-learning portal. The digitization project is one of the most needed projects for the Internet as a major source of knowledge and learning resources.

The Ministry of Education has signed an agreement with the Palestinian Telecommunications Group to link government schools to the Internet to meet this goal.

Where the number of schools that have been connected to the Internet 1763 schools distributed across the provinces of the country at speeds ranging between 2Mbps and 8 %. The percentage of schools connected to Internet service reached 88.4% of government schools. The number of students benefiting from Internet service reached 492,257 students. The number of teachers benefiting from Internet service was3,051 teachers and teachers. The number of schools in which the Internet service covers all schools throughout the school is 528 schools.

The number of schools connected to the Internet in Bethlehem governorate was 117 out of 131 schools with 89.3%.

It is the statistics of the digitization program of education 2017-2018

Detail	Number of schools	Number of tablets	Number of interactive projectors	Number of wireless networks
the number	50	4094	140	50
Funding source		Municipalities and local communities	The Ministry of Education and Higher Education	The Ministry of Education and Higher Education
the cost in dollars		1351020	210000	125000
	Total amount for all machines that have been supplied to schools			1686020

Statistics of the schools that have been joined to the program new projects, some of which were implemented, and some are in the process of implementation in the Ministry of Education and Higher Education in 2018

project name	Number of schools	Number of tablets

Project Cooperation (Schools Directorate of Jerusalem)	36	1600
Turkish project	4	1647
Chinese government	1	150
Total	41 schools	3397 Tablet devices

The complete statistics of all implemented and what is the implementation phase from the beginning of the program

Detail	Number of schools	Number of tablets	Number of interactive projectors	Number of wireless networks
Bids of Municipalities	87	8034		
Projects with the Ministry	74	5660	240	161
Cost in dollars for equipment	161	2651220 (Bidding only)	360000	402500
	Total amount for all machines that have been supplied to schools			3413720

Expected to be implemented during 2019

Detail	Number of schools	Number of tablets	Number of interactive projectors	Number of wireless networks
Bids of Municipalities	50	5000	150	50
Cost in dollars for equipment		1750000	300000	150,000

- Implementation mechanisms
  1- Tender for the digitization of education program in cooperation with municipalities
  2- Infrastructure for targeted schools
  3- The implementation of training for teachers is as follows

- Teacher Training:
  - Using and maintaining tablets and using classroom management software.
  - Basic skills in computer and internet 5-10 hours of training according to the training needs of teachers.
  - Designing learning by employing tablet devices in education by 25 training hours.

Train school principals and supervisors to support and follow up teachers in integrating and evaluating technology in education and classrooms

Statistics of the digitization program of education in the Directorate of Education and Higher Education Bethlehem

Directorate	School	Target grades in school	Number of people targeted at school	Number of students targeted	Number of teachers targeted	Number of tablets in school	Number of interactive projectors	Number of Laptop	Is there a wireless network ?
Bethlehem	The daughters of the Virgin Mary	Fifth, sixth	9	247	12	247	1	2	Yeah
Bethlehem	Males of Salah al - Din basic	Fifth, sixth	7	266	11	236	1	1	Yeah
Bethlehem	Secondary School for Girls (Mar Youssef)	Fifth, sixth	4	128	13	128	2	4	Yeah
Bethlehem	Open the mixed secondary Paul	Fifth, sixth	2	28	7	28	1	1	Yeah
Bethlehem	Elite Core Mixed	Fifth, sixth	4	88	7	68	1	1	No
Bethlehem	The daughters of the fundamentalist caliphs	VI	3	90	8	29	1	4	Yeah
Bethlehem	Basic Besan males	Fifth	3	87	9	33	1	1	Yeah
Bethlehem	Powered by vBulletin	VI	2	47	6	22	1	1	Yeah
Bethlehem	Basic Nazareth Girls	Fifth, sixth	4	143	7	143	1	2	Yeah
Bethlehem	Patriarchate of Roman Catholicism	Fifth, sixth	3	Games	5	Games	1	3	Yeah
Bethlehem	Girls of Beit Jala High School	Fifth, sixth	2	82	7	82	1	5	Yeah
Bethlehem	Male Wadee Dams Basic	Fifth, sixth	3	71	5	71	1	5	Yeah
Bethlehem	Laura Veconia Mixed Core	Fifth, sixth	2	47	6	47	0	1	No
Bethlehem	Latin Patriarchate High School Beit Jala	Fifth, sixth	4	105	11	105	1	4	Yeah
Bethlehem	Good Secondary Shepherd	Fifth, sixth	2	47	5	47	0	1	No
Bethlehem	Mar Afram Secondary School	Fifth, sixth	3	76	7	76	0	2	No
Bethlehem	Male basic editing	VI	2	70	5		70	6	Yeah
Bethlehem	Holy Child Program	Fifth, sixth	2	10	7	41	1	2	Yeah

Appendix(2)

Analysis of the educational objectives of the human body equipment unit for science and life course for the sixth

Analysis of the educational objectives of the science and life course for the sixth grade		
Unit IV: Human body organs	**Content: Biology**	
The lesson	Educational goals	Cognitive level
Lesson 1: Parts of the circulatory system	Lists the cases in which the blood leaves the blood vessels	Knowledge
	Called the membrane surrounding the heart	Knowledge
	Describes blood condition	Comprehension
	Explain the meaning of blood	Comprehension
	Adjusts the location of the heart in the human body	Application
	Determines the location of blood vessels in the human body	Application
	Draws the composition of the heart from within	Application
	It analyzes why the human circulatory system is considered a closed device	The Analysis
	Compare the shape and size of the heart	The Analysis
	The reason for a break between the left and right part of the heart	The Analysis
	Compare the chambers that make up the heart	The Analysis
	Checks the amount of blood volume in the human body	The Analysis
	compares the blood pathway in the arteries and veins	The Analysis
	Complicates blood as a mixture	The Analysis
	analyzes why the blood is red	The Analysis
	Install the parts of the gyro	Synthesis
	Predicts why the gyro is named by this name	Synthesis
	The source of the impulses predicts when the palm is placed on the left side o	Synthesis
	He writes a report on the function of the heart in the body	Synthesis
	Connects the types of blood vessels	Synthesis
	Indications of blood components	Synthesis
	The student gives his opinion about the importance of the pericardial membra	Evaluation
	Assesses the importance of valves in the heart	Evaluation
	Estimated blood vessel function	Evaluation
	The function of each type of blood vessel is deduced	Evaluation
	appreciates the importance of blood	Evaluation
	Criticizes why blood is considered a tissue	Evaluation
Lesson 2: Blood circulation in the huma	Draws the blood path during the micro circulation	Application
	Draws the blood path during the major blood circulation	Application
	Checks the normal pulse rate of the healthy person per minute	The Analysis
	The reason for naming the major blood circulation is explained by the systemi	The Analysis
	Compares the wall of the left ventricle and the right ventricle wall	The Analysis
	Plan the mechanism of the heart	Synthesis
	Connects the cause of the designation of micro-circulation and pulmonary circ	Synthesis
	The factors that depend on the pulse rate are deduced per minute	Evaluation
	Give his opinion on the description of the heart with a strong pump	Evaluation
	The conclusion of the importance of blood circulation	Evaluation
	Assesses what happens when blood reaches the cells of the body	Evaluation
	Justifies the integration of small and large blood circulation	Evaluation

Lesson 3: Circulatory system	Anemia is defined	Comprehension
	Compare a rigid blood vessel and other healthy	The Analysis
	Discusses the meaning of atherosclerosis	The Analysis
	Summarizes the symptoms of anemia	Synthesis
	Predicts differences between a blood sample of an anemic person and a healt	Synthesis
	Summarizes the main causes of anemia	Synthesis
	Suggested tips for the prevention of atherosclerosis	Synthesis
	The causative agent concludes the atherosclerosis and obstruction	Evaluation
	Justifies doctors' advice to exercise on a daily basis	Evaluation
Lesson 4: The urinary system	The name of the device that follows the kidneys is mentioned	Knowledge
	Called a blood vessel that carries blood to the filtered blood circulation	Knowledge
	Description of the blood vessel that carries blood to the kidney to be filtered	Comprehension
	Demonstrates urinary composition elements	Comprehension
	Where the kidneys are located in the human body	Application
	Paints the parts of the urinary system (kidneys, ureters, bladder, urinary tract)	Application
	Explains why kidneys are considered a body filter	The Analysis
	It compares the function of parts of the urinary system	The Analysis
	Explains why the urinary system is considered to be one of the body's output	The Analysis
	Classifies the substances carried by the blood into the kidney	The Analysis
	Indicates the ability of the person to control the process of disposal of waste	Synthesis
	Estimated function of parts of the urinary system (kidneys, ureters, bladder, u	Evaluation
	The integration between the urinary system and the gyro device is concluded	Evaluation
Lesson 5: Health of the u	Shows the meaning of kidney failure	Comprehension
	Explains transplantation	Comprehension
	"The steps of the process of industrial dialysis "dialysis	The Analysis
	The difference between the size of the dialysis machine and the natural kidney	Synthesis
	Predicts the fate of a person living in only one college	Synthesis
	Summarizes the causes of diseases of the urinary system	Synthesis
	Suggest tips for prevention of urinary tract diseases	Synthesis
	He expresses his opinion on the importance of organ transplantation	Evaluation
	Synthesis : 17	
	Comprehension : 7	
	The Analysis : 18	
	Evaluation: 16	
	Application : 7.3	
	Knowledge:: 4	
	Total : 69	

Appendix(3)

Planning model with learning outcomes

Great idea
Students should be able to practice healthy and healthy behaviors to maintain both the gyro, the device and the polycarbonate

Learning Outcomes
1. Work of healthy blankets for diseases of the circulatory system and urinary system and how to prevent diseases. 2. Design of prototypes of the urinary system and gyro device. 3. Students can make friends and family aware of the dangers of following wrong habits. 4. Computerized lesson design

Knowledge	Skills	Values and trends
Human body organs	Dialogue, problem solving, brainstorming, exploration, analysis, conclusion, digital skills	To appreciate the greatness of God

Lesson number and lesson title	Procedural objectives	Lesson activities (teacher role, learner role)	Evaluation
1.The circulatory system	1 - to know the students on parts of the circulator	- Initialization, tribal evaluation linked to life contexts 1. Perform an activity (1) using the video in the digital book 2 - Presentation of an illustration of the rotation device on the students using the interactive board 3 - Assigning a high-level student to read the parts on the image 4 - Assigning one of the students of the intermediate level to identify the parts of the gyro on the interactive board 5 - Assigning a student of the weak level to determine the heart 6 - The teacher to clarify the parts of the gyro in front of the students 7. Write the correct answers using the interactive monitor 8 - Students conclude the components of the circulator	

	2- Students watch the heart parts through autopsy	- Training of female students 1 - Implementation of activity (2) virtual laboratory strategy 2 - Bring the heart of a sheep 3-plate dissection, dissection tools, gloves, plastic tube 4. Place the heart on the anatomy plate 5 - Assign students to describe its shape and size 6. Make a longitudinal section of the heart using anatomy scissors 7 - Assign students to examine the heart from the inside 8 - The students conclude the number of heart chambers 9 - Question of students What separates each two chambers perpendicular to each other 10. Record correct answers on the interactive display and digital book 11 - Watch a video illustration of the parts of the heart and compare parts with the parts that the student saw during the process of dissection of the heart	
	3- The students explain the blood vessels	1 - the implementation of activity (3) using the cooperative learning strategy 2 - View the image on the interactive display of blood vessels 3 - Distinguish students between arteries and veins 4 - Assigning a student of higher level to identify the arteries and veins on the board 5. Assigning a middle-aged student to set capillaries on the board 6 - Clarification of the students compared between the arteries and veins and blood type of mobile and the direction of each 7 - simulation of blood vessels mediated by transparent plastic tubes with water colored red to mimic the arteries and a tube of blue water simulates the veins 8. Record health answers on the interactive board and digital book.	
	4- Students should learn about blood and its components	1 - the implementation of activity (4) presentation of an explanatory video about the blood components of the digital book 2 - Assign students to describe the state of blood 3 - Explain the components of blood 4 - question students some questions about the components of blood 5. Watch a blood slide ready under the microscope 6 - Assign students to draw what they saw under the microscope 7 - the strategy of collective learning to assign students to work a project in which a model is designed in which the components of blood from the raw materials surrounding environment	

		8-Writing correct answers to the interactive board and the book	
2. Blood circulation in the human body	1 - to identify the students on the pump strange Simulation of heart pump	- Display video illustration represents the blood circulation micro and large 1 - the implementation of activity (1) virtual laboratory strategy simulation of the heart pump 2. Bring balloon, plastic bowl, juice pipettes. Colored water 3 - Assign a group of female students to help the teacher to create a pump that mimics the heart pump 4 - After the completion of the work assigned the students to click on the balloon 5. Instructing students to use the exploration strategy to record their observations 6 - The teacher to clarify the mechanism of heart work in front of the students mediated by the heart 7 - Assigning a high level student to restore the mechanism of heart work 8 - Assign another middle-level student to restore the mechanism of heart work 9 - Write the correct answers on the interactive board and the digital book	
	2- Students demonstrate the small and large blood cycles	- The formation of female students, tribal calendar is linked to life contexts 1 - Implementation of activity (2) cooperative learning strategy and exploration 2-Watch a video presentation of the micro pulmonary circulation in the digital book 3 - Illustration of female students blood direction in the pulmonary cycle 4. Using a diagonal chart using a digital book, microcirculation is followed 5-view video of the major blood circulation 6-Diagram using a digital book tracking the major blood circulation 8 - Assigning a high-level student to distinguish between micro and small circulation 9. Assigning a middle-level student to re-track the course of the major blood circulation	

3. Circulatory system diseases	1 - to identify students on diseases that affect the circulatory system and methods of prevention	- Implementation of activity (1) cooperative learning strategy 2 - Assigning a student of higher level to read the text 3 - Assign students to try to answer the questions of the text 4 - showing blood samples to a healthy person and another anemic 5 - Assign students to discover the difference between the two samples 6 - Students offer some suggestions for the prevention of anemia and the presentation of video awareness of the digital book 7 - Write the correct answers on the interactive board and digital book	
	2 - to show students the main cause of atherosclerosis and methods of prevention	1 - the implementation of activity (2) cooperative learning strategy 2 - Assign students to read the text 3 - Display images of blood vessels infected with atherosclerosis and other sound 4 - Watch a video of the digital book shows atherosclerosis disease Draw and illustrate on the interactive board the accumulation of fat on the inner walls of the arteries 5 - Students conclude methods of prevention of atherosclerosis diseases	
4- Urinary tract	Students recognize the body strainer	1 - the implementation of activity (1) cooperative learning strategy 2 - Assign a student to read the text 3 - Assign students to locate the kidneys in the body 4 - Simulate the total students 5 - Students conclude why the kidneys were called body filters 6 - Presentation of a video illustrative dialysis	
	Students should remember the parts of the urinary system	1 - the implementation of activity (2) cooperative learning strategy 2 - Presentation of a video on the anatomy of the urinary system of the interactive book on the urinary system 3 - Assigning a middle-level student to mention the parts of the urinary system 4 - Another student assigns the parts to the digital book displayed on the board 5- Description of kidney and bladder 6 - Assign students to paint the urinary system and clarify the parts it 7 - Write the correct answers on the interactive board	
	The student should clarify the work of the urinary system	1 - the implementation of activity (3) strategy of exploration and collaborative learning 2 - bringing the college model 3-View the total of the groups 4 - clarify the parts of the college for students	

		5 - Assign students to restore the parts and function of the college 6 - Students conclude the relationship between the urinary system and the gyro 7 - Cooperative Learning Strategy Students design a model of the urinary system of environmental raw materials	
Health of the urinary system	1 - to recognize students to some diseases that affect the kidneys	1 - the implementation of activity (1) cooperative learning strategy 2 - Assigning student groups to read the text 3. Analysis of the text 3 - Students conclude the diseases that are exposed to kidneys 4 - Assigning a description of what you see in the picture shown 5 - comparing students between the size of the kidney and dialysis	
	2 - Students should propose ways to prevent urinary tract diseases	1 - the implementation of activity (3) cooperative learning strategy 2 - View the picture shown in the digital book on the students 3 - Assign students to extract tips from the picture to prevent urinary tract diseases and provide them to his family and friends 4 - Solving the unit's questions in the cooperative learning strategy using the digital book 5 - follow-up students	

Appendix(4)

Table of specifications for the achievement test in the unit of human body organs For the 6th graders							
Cognitive Domain	Number	Percentage	Lesson one	Lesson Two	Lesson Three	Lesson Four	Lesson Five
Knowledge	4	5.8%	2	-	-	2	-
Comprehension	7	10.1%	2	-	1	2	2
Application	7	10.1%	3	2	-	2	-
Analysis	18	26%	8	3	2	4	1
Synthesis	17	24.6%	6	2	4	1	4
Evaluation	16	23.1%	6	5	2	2	1
Total	69	100%	27	12	9	13	8

Number of questions = 3

Total scores = 30 marks

Appendix(5)

Demonstrates ease and discrimination coefficients for each of the test paragraphs

Question no	Ease of paragraph	upper group	lower group	coefficient of discrimination
1	0.666667	12	7	0.333333
2	*	*	*	*
3	0.333333	8	1	0.466667
4	0.5	10	4	0.4
5	0.7	16	4	0.8
6	0.433333	10	2	0.533333
7	*	*	*	*
8	0.633333	14	4	0.666667
9	0.6	13	4	0.6
10	*	*	*	*
11	0.633333	12	6	0.4
12	0.6	14	3	0.733333
13	0.566667	12	4	0.533333
14	0.466667	9	4	0.333333
15	0.433333	10	2	0.533333
16	0.633333	15	3	0.8
17	0.366667	8	2	0.4
18	*	*	*	*
19	0.533333	13	2	0.733333
20	0.7	15	5	0.666667
21	*	*	*	*
22	0.6	12	5	0.466667

23	*	*	*	*
24	*	*	*	*
25	*	*	*	*
26	0.633333	14	4	0.666667
27	*	*	*	*
28	*	*	*	*
29	0.433333	10	2	0.533333
30	0.533333	12	3	0.6
31	0.566667	12	4	0.533333
32	0.533333	11	4	0.466667
33	*	*	*	*
34	*	*	*	*
35	0.766667	16	6	0.666667
36	*	*	*	*
37	0.483333	20	7	0.433333
38	0.866667	36	14	0.733333
39	0.5	37	5	0.711111

Appendix(6)

Al-Quds University

Deanship of Graduate Studies

Institute of Rural Development / Faculty of Business and Economics

Institution-building and human resources development

Test instructions

Dear student

In your hands is a test of achievement of what you learned in the unit of human body devices in the 6th graders science unit

You are required to:

- **Read each question carefully and answer all the questions**
- **Exploit the test time of (50) minutes to answer the test.**
- **Review answers after completion.**

Thank you for your cooperation

The name:	**Testing the fourth unit "human body organs"**	**Subject: Science and Life**
Date:	**For the 6th graders**	**Time: 50 minutes**
Class		**Total cores : 30**
Division:		

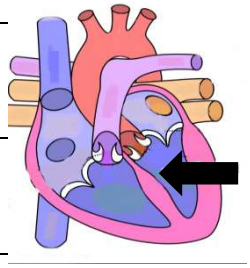
First question: Put a circle around the correct answer code: (23 sign)

1- One of the following is not a component of the Circulatory system:
A) lungs b) heart c) blood vessels D) blood

2- The Circulatory system is called this name because:
A) Its shape is circular B) cells circular C) Blood flows to the entire body and returns to the heart D) Heart chambers are circular

3- The importance of Pericardium is that:
A) Protects the heart. B) Facilitates heart movement
C) prevents the mixing of oxygenated blood without oxygenated D) a + b

4- The part that the arrow map to in the drawing next is:
A) The right atrium B) The left atrium C) Right ventricle D) Left ventricle



5- To prevent the mixing of oxygenated blood with non-oxygenated blood,
A) Pericardium B) Valve C) Muscle separation D) Blood filaments

6- The amount of blood in the body is estimated at:
A) 4-5 liters B) 5-6 liters C) 6-7 liters D) 7-8 liters

7- Since blood components can be separated, blood is considered:
A) Component B) Mixed C) Composite D) Molecule

8- All of the following are important for blood in the human body Except that :
A) Transports food and oxygen to the cells of the body
B) Protects the body from diseases
C) Transfer the waste and carbon dioxide to the extraction centers
D) Reduces body immunity

9. The Red color of the blood are due to :
A) The presence of carbon dioxide B) the presence of hemoglobin
C) The presence of platelets D) The presence of oxygen

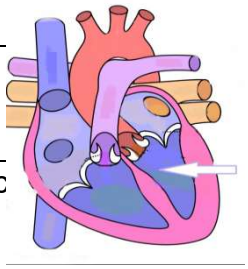
10- The normal pulse rate of a healthy person is estimated per minute:
A) 55-60 pulse B) 60-65 pulses C) 80 a beat D) 85-90 pulse

11. Things that do not increase the rate of pulse in humans:
A) Muscle exertion B) Drink stimulants
C) Exposure to a sudden position D) Drink water

12. Blood circulation in which the blood is pumped into the lungs to be loaded with oxygen and the removal of carbon dioxide, called:
A) Micro blood circulation or pulmonary b) systemic cycle
C) Major circulatory D) Vital cycle

13. Heart shape is like a bead:
A) Tomatoes b) pear c) grapes D) melon

14. From drawing next, which parts of the heart will be thicker?
A) Right atrium b) left atrium c) right ventricle D) left ventricle



15- A disease caused by a decrease in the rate of the formation of the blood c
A) Anemia B) High blood pressure C) AIDS D) Diabetes

16- Causes of atherosclerosis:
A) Eat vegetables and fruits B) Exercise on a daily basis
C) Eating healthy balanced food D) smoking

17. Hardened blood vessels differ from normal blood vessels by:
A) Swelling of blood vessels
B) Enlargement of the arteries
C) The heart becomes infected with coronary atherosclerosis
D) Smooth musculature in the walls of blood vessels

18. Examples of urinary system diseases:
A) Diabetes B) renal failure C) anemia D) cirrhosis of the liver

19- Which of the following treatments for renal failure can be performed:
A) Organ transplantation B) Catheterization
C) Kidney resection D) Open heart

20- Human can live by :
A) Two kidneys B) one kidney C) without kidney D) a + b

21- All of the following may cause urinary tract diseases except:
A) Eat plenty of sugars B) Coffee C) add salt heavily D) drink water

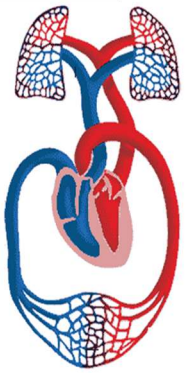
22. The type of relationship between the urinary system and the Circulatory system is:
A) Integration B) competitive C) not related D) Membership

23- What happens if some liquid waste and salts that exceed the need of the human body are not filtered?
A) Overweight B) Body poisoning
C) The difficulty of movement D) The body will re-absorb

Second question **(2 Marks)**

A : Based on the shape of the attachment complete the ballet space by:

(Right ventricle, carbon dioxide, oxygen, left ventricle)



-Oxygenated blood is pumped all over the body from [ ] [ ]

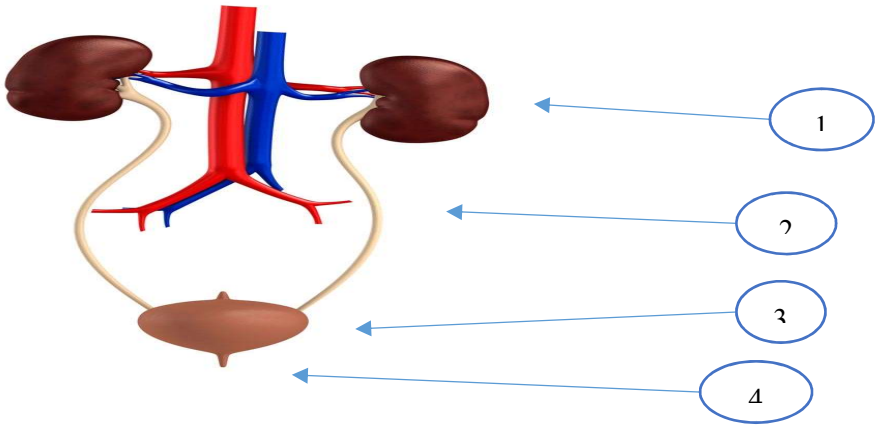
-The blood comes [ ] from around the body to the right atrium.

-Carbon dioxide blood was pumped into the lungs from [ ] [ ].

-The [ ] laden blood reaches the lungs Left atrium.

B: Based on the shape of the adjacent: (2 Marks)

Correct the phrases based on the members' position on the drawing?



Item (1) is the **bladder**, it filters blood from the waste: _____

Item (2) is **the urinary canal, it** transport the waste: _____

Item (3) is the **kidney, it** Dispose of waste disposal: _____

Item (4) is the ureter: _____

Question 3: After studying the circulatory system and polyps, when you feel the following symptoms, what should you do in the following cases: (3 marks)

1. You felt pain down your abdomen and heartburn when you urinated.

A) Refrain from eating and drinking forever.

B) I totally ignore it.

C) Drink more water and fluids. D) Taking a painkiller

---

2. One of the following symptoms indicates a defect in the function of the kidney:

A) A headache B) Blood in urine

C) Anorexia D) Chest pain

---

5. A child feels tired when performing simple aerobic exercises or with stairs going up with paleness and headache and also pulse speed is most likely having a deficiency:

1) Oxygen component 2) Iron element

3) Calcium component 4) Potassium component

The questions are over

Appendix(7)

Al-Quds University

Deanship of Graduate Studies

Institute of Rural Development / Faculty of Business and Economics

Institution-building and human resources development

Dear student

After Greetings,,,

" The role of using digitization of education on the achievement and motivation of the 6th graders students in science and the attitudes of their teachers towards their use in government schools in Bethlehem governorate"

The researcher aims to detect the effect of some variables on the motivation (internal and external) towards the use of digitization in education, and for the purposes of purely scientific research, the researcher puts in your hands a questionnaire specifically designed to measure motivation towards the use of digitization of education "

By digitizing education, we mean to employ ICT more effectively and effectively through active learning, which is based on the production of knowledge, active participation and teamwork by providing the curriculum digitally on tablet computers It is also equipped with educational games as well as various learning sources , and this strategy is based on transforming the curriculum into an interactive curriculum, which contains the feature of converting still images into interactive images. It is accompanied by a training program that enables them to optimize the use of ICTs in the teaching and learning processes. The information given will be treated in strict confidence and for the purposes of scientific research, seeking to answer each paragraph with all frankness, accuracy and objectivity in expressing your opinion.

Researcher
Abeer Mousa

This questionnaire consists of two parts:

Section I: This section includes the personal information of the respondent, so please choose the answer that matches your information, circle what applies to you.

Gender: ☐ Male ☐ Female

Section II: This section consists of a set of paragraphs aimed at measuring the motivation of students to use the digitization of education, please mark the X in the place that you think suits your personal conviction, your opinion or your estimates, To the lowest value (never).

No	The first Domain (internal motivation): This topic deals with the extent of internal motivation towards the digitization of education among students	Always	frequently	Sometimes	Scarcely	Never
1	The classes of digitization feel anxiety and tension.					
2	My understanding and comprehension of the material decreases when using digitization					
3	The method of digitization is difficult to teach.					
4	I lack self-confidence to use my tablet.					
5	I accept the use of tablet devices, so I get special education to get high marks					
6	The style of digitization helps me to rely on myself a lot.					
7	The method of digitization encourages me to search for new subjects related to the lesson material.					
8	The use of digitization teaches me the material deeper and easier.					
9	Using digitization is an interesting and fun way to learn.					
10	Failure in the digitization exam makes me insist on success in all other subsequent exams.					
11	Tablet use encourages me to use the Internet in education.					
12	My educational activities collectively give me happiness and pleasure.					
13	I'm constantly training to use the tablet.					
14	Using interactive boards is very easy.					
15	I use the computer whenever I have the opportunity.					
16	I follow all that is new in digitizing education.					
17	Restoring any educational material at any time raises my motivation to learn.					
18	I am motivated by the class given by digitization.					

No	The second Domain (external motivation): This topic deals with the extent of external motivation towards the digitization of education in students.	Always	frequently	Sometimes	Scarcely	Never
1	Encouraging our teachers to use digitization makes learning fun.					
2	The use of digitization encouraged the teacher to use groups in education.					
3	My parents encouraged me to use digitalization in learning.					
4	Using different types of learning educational activities encourage me to learn.					
5	When I see excellent students in the use of tablets it makes me to be like them.					
6	The use of tablets stimulates competition among students in the classroom.					
7	Ignore everything the teacher says that uses digitization in teaching.					
8	Encouraging the school administration to use digitization is more enthusiastic to use.					
9	Replacing paper books with digital books makes me feel better than others in education.					
10	By use tablet I gained new skills important to me.					
11	Joint work in digitization strengthens relationships with other students.					
12	The Digital Science Platform encourages me to participate in learning.					
13	Educational activities in the digital book are related to our daily activity.					
14	Tablets encouraged me to complete computer lesson.					
15	Getting the test result immediately encourages me to use digitization.					
16	The method of digitization encourages me to study.					
17	School administration encourages teachers to use digitization.					
18	School management provides environmental conditions in the school to use digitization.					

Thank you for your cooperation

Appendix(8)

Al-Quds University

Deanship of Graduate Studies

Institute of Rural Development / Faculty of Business and Economics

Institution-building and human resources development

Subject: A special questionnaire using digitization in education

Dear Teacher

After Greetings,

This questionnaire seeks to examine

"The role of using the digitization of education in the achievement and motivation of students in the 6th Graders in Science and the attitudes of their teachers towards their use in government schools in Bethlehem"

By digitizing education, we intend to employ technology more effectively and effectively through active learning, which is based on the production of knowledge, active participation and teamwork by providing the curriculum digitally on tablet computers Equipped with educational games as well as various learning resources, This strategy is based on transforming the curriculum into an interactive curriculum, with the feature of converting still images into interactive images , accompanied by a training program that will enable them to optimize the use of ICTs in teaching and learning processes .

So please answer the paragraphs accurately and objectively, knowing that the information will be used for scientific research only And will remain the subject of total confidentiality.

Researcher

Abeer Mousa

This questionnaire consists of two parts:

Section I: This section includes the personal information of the respondent, so please choose the answer that matches your information, by placing a signal X Inside the appropriate box.

Gender:

☐ Male ☐ Female

Qualification:

☐ BA ☐ M.A.

Years of Experience:

☐ Less than 5 years ☐ From 5 years to 10 years

☐ From 10 to 15 years ☐ More than 15 years.

Gender Of school

☐ Males ☐ Female

PLACE OF SCHOOL:

☐ Town ☐ village

Courses The training I received in the area of digitization :

☐ I did not receive training courses

☐ 1-2 training courses.

☐ More than 3 training courses.

Specialization :

☐ Biology ☐ chemistry ☐ physics

Section II: This section includes 40 sections containing information on the use of digitization of education, please mark the X in the place that you think suits your personal conviction, your opinion or your estimates, noting that the rating is the highest value (always) to Lowest value (never).

no	**The first Domain: Students: This topic deals with the effect of the use of digitization on the motivation and achievement of students from the point of view of teachers.**	**Always**	**frequently**	**Sometimes**	**Scarcely**	**Never**
1	The use of digitization in science education leads to distracting students' minds from the content of education.					
2	The use of digitization in science education negatively affects students' participation in group work.					
3	The use of digitization in education limits the growth and visibility of learners' creativity and innovation.					
4	Students dislike my material if they resort to using digitization in education.					
5	Poor training of students on computer use weakens the use of digitization in teaching.					
6	The large number of students in the classroom hinders the use of digitization in education.					
7	The use of digitization develops the student's ability to communicate and communicate.					
8	When using the digitization method, we keep attracting students' attention.					
9	Students keep information longer when using digitization.					
10	The use of digitization in the teaching of science increases the motivation of students to learn.					
11	When using digitization in education, students share work.					
12	Accreditation of digitization in science education helps to take in consideration the individual differences between students.					
13	The use of digitization in teaching science as an enhanced factor towards learning.					
14	The use of digitization in science education enhances student independence and self-reliance.					

no	The second Domain (teachers): We focus on this axis on the views and views of teachers who respond to the use of digitization of education.	Always	frequently	Sometimes	Scarcely	Never
1	Keep away from using digitization in education because it requires a lot of pre-scientific preparation of the lesson material.					
2	The use of digitization raises chaos among students.					
3	The use of digitization reduces the value of the teacher to students as a primary source of information.					
4	The weakness of teachers ' desire to use digitalization to a need to time, effort and efficiency.					
5	Weak training of teachers in digitizing teachers away from the use of digitization in education.					
6	Use The method of digitization encourages students to participate actively.					
7	The use of digitalization of education fills the gap in the teaching of science.					
8	The use of digitization in science teaching helps to change the teacher's role from a teacher to a mentor.					
9	Digitalization has been adopted in education despite the lack of adequate material resources.					
10	Use digitization in learning to keep up with other colleagues so that I'm not the least of them.					
11	Digitalization in teaching enables students to diversify learning resources.					
12	My lack of knowledge of digitalization keeps me away from using it.					

no	3ed Domains Means and Methods: This topic is concerned with the reasons and reasons for the use of digitalization of education in science from the point of view of the respondents....	Always	frequently	Sometimes	Scarcely	Never
1	I avoid using digitization in education because it needs to be prepared in advance.					
2	The use of digitization in education without good preparation fails to achieve the desired goals.					
3	Students interact more when using tablets.					
4	The use of tablet devices provides time and effort.					
5	I judge the efficiency of education in the institution through the availability of digitalization devices.					
6	The use of digitization in science education improves the quality of teaching.					
7	I consider the interactive presentation of the best techniques used in the digitization of education.					
8	The use of digitization in science education is varied in teaching methods.					
9	The adoption of digitization in education is a development of the educational process with all its doors.					
10	The revenue from using digitization is less than the cost of using digitization.					
no	**The fourth domain (Curriculum): This axis is concerned with the view of the responding teachers on the digitized curriculum.**	**Always**	**frequently**	**Sometime**	**Scarcely**	**Never**
1	The nature of curriculum design does not encourage the use of digitization in a good or effective form.					
2	The momentum of the curriculum weakens the use of digitization in education in depth.					
3	Evaluation of the curriculum in a way that is somewhat remote from the fact that the learner is the focus of the educational process hinders the use of digitization to rely on the teacher in teaching.					
4	The design of the curriculum by digitization enhances the role of the learner in education.					

Do you prefer to digitize education?

☐ Yeah ☐ No

If your answer is yes or no, please number the following in ascending order of importance from (1-4) :

If your answer is yes due to:

☐ The use of digitization increases the motivation of students to learn.

☐ The use of digitization helps change the role of the teacher from a teleprompter to a router.

☐ The use of digitization helps to inconsideration the individual differences between students.

☐ the use of digitization varies in teaching methods

Other:

If your answer is not because of:

☐ Use of the numeral needs to be prepared in advance.

☐ The use of digitization raises chaos among students.

☐ Weak training of students on the use of tablets.

☐ The large number of students in the classroom hinders the use of digitization.

Other: .

Thank you for your cooperation

Appendix(9)

Committee of Judges

1	Dr.Mohsen Adas	Dean of the Faculty of Education, Al-Quds University
2	Dr.Kaled Sabarneh	Dean of the Faculty of Allied Medical Sciences, Palestine National University
3	Dr.Majed Aldarras	Al-Quds Open University
4	Dr.Nael Abdelrahman	Al-Quds Open University
5	Dr.Mohammed Ekhlail	Al-Quds Open University
6	Bassam Jaber	Director of the Directorate of Education Bethlehem
7	Mahmoud Odeh	Head of Technology Department In the Directorate of Education Bethlehem
8	Walid Radwan	Head of Supervision Department In the Directorate of Education Bethlehem
9	Raed Ahmad	Supervisor of Science at the Directorate of Education Bethlehem
10	Hasan Hamamrah	Supervisor of Science at the Directorate of Education Bethlehem
11	Rinal Alzoghby	Supervisor of Science at the Directorate of Education Bethlehem
12	Samaher Ghayadah	Information Technology Supervisor at the Education Directorate of Bethlehem
13	Eng.Mustafa Mutair	Head of the Department of Equipment and Maintenance in the General Department of Technology and Information Technologies at the Ministry of Education
14	Ghada Shalan	Teacher
15	Maisa Obayat	Teacher
16	Ala Dadoud	Teacher
17	Raeda Zwahre	Teacher