

Benefit from technique of virtual reality in designing handmade textile

(Analytical and evaluation study)

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Abstract:

This research seeks to diagnose the current situation and applications of virtual reality in the field of the textile industry, as it has become impossible to make progress in one area, especially the hand-made textile industry, without benefiting from the research results in other fields.

The default graphic for formal, formal faculty, technical drawing, histogram

Using a typical engineering model in practical training on virtual reality technology, a group of faculty members in the Technical Teaching Department of the College of Art Education at the College of Education, where their number reached (50). Opinion was measured in the default alienation standard (virtual alienation) taken from the theory of alienation Social.

The research concluded that faculty members have opinions about the level of satisfaction with the personal experience with this technique in the field of hand weaving.

And that means reality technology is a great idea tool to have a presentation in the field of craftsmanship by using versus more productive generations and presenter versus appearing in what could be the era of presentation.

Keywords: technology, virtual reality, manual

Introduction:

This study is discussing a main question which is "Is the use of virtual reality technique in the field of handmade textile (as educational technique) considered not neutral culturally? The discussion of this question has happened to expand the circle of discussion around the use of virtual reality technique in art education in the educational system in order to develop and improve methods of teaching and increase the efficiency of educational instruments. Mandora,1989:53.

Keywords:

technology, virtual reality, manual

ملخص البحث

يسعى هذا البحث الى تشخيص الوضع الراهن لمفهوم وتطبيقات الواقع الافتراضي في مجال صناعة النسيج اليدوي حيث اصبح من المستحيل احراز تقدم في احد المجالات ولا سيما صناعة النسيج اليدوي دون الاستفادة من نتائج البحث في المجالات الاخرى .

يهدف البحث الى التعرف على اتجاهات الرأي لاستخدام تقنية الواقع الافتراضي في تعليم النسيج اليدوي عند عينة من اعضاء هيئة التدريس بقسم التربية الفنية بكلية التربية النوعية، ومعرفة الجوانب النفعية لتقنية الواقع الافتراضي في تعليم وتصميم النسيج.

وتبنى البحث طريقة البحوث الميدانية الشبة تجريبية في تصميم مناهجها حيث تم جمع المعلومات من العينة قبل وبعد القيام بتدريس منهج نظري (في شكل جلسات) عن تقنية الواقع الافتراضي في تصميم النسيج اليدوي والقيام بالتدريب العملي على استخدام تقنية الواقع الافتراضي (في شكل برمجيات) وتمثل العينة مجموعة من أعضاء هيئة التدريس بقسم التربية الفنية بكلية التربية النوعية حيث بلغ عددهم (50) وقد تم قياس اتجاهات الرأي باستخدام معيار الاغتراب الافتراضي (Virtual Alienation) المتخذ من نظرية الاغتراب الاجتماعية .

وخلص البحث الى أن أعضاء هيئة التدريس يتحلون في الغالب باتجاه رأى إيجابي نحو تقنية الواقع الافتراضي وأن تدريس هذه التقنية نظريا والتدريب عليها يساعد على جعل هذا الاتجاه أكثر إيجابية كما وجد أن اتجاهات الرأي ترتبط إيجابيا مع الرغبة في سماع آخر أبناء تطورات تقنية الواقع الافتراضي وكذلك مع مستوى الرضا عن التجربة الشخصية مع هذه التقنية في مجال النسيج اليدوي .

وبعنى ذلك ان تقنية الواقع الافتراضي تعتبر اداة لاكتساب قدرة تنافسية في مجال صناعة النسيج اليدوي وذلك بتربية أجيال أكثر إنتاجية ومقدرة على البقاء فيما يمكن أن يسمى عصر (ثورة المعلومات) .

الكلمات المفتاحية:

تقنية، الواقع الافتراضي، النسيج اليدوي

Introduction:

This study is discussing a main question which is “How to use of virtual reality technique in the field of handmade textile (as educational technique) considered not neutral culturally? The discussion of this question has happened to expand the circle of discussion around the use of virtual reality technique in art education in the educational system in order to develop and improve methods of teaching and increase the efficiency of educational instruments. Mandora,1989:53.

This study emphasizes the link between the situation of neutrality of the cultural virtual reality technique with the general frame of virtual reality technique in the field of art education, knowing that virtual reality technique in this field is considered a part of techniques that are most probably imported from culture (mostly western) that is different from our culture and civilization, and any trial to adjust the influence of using virtual reality technique in local cultures without linking it to the technique in general is considered a partial, unintegrated evaluation.

This study concludes that virtual reality technique (and the technique in general) is made up of two main parts which are instruments (solid materials) that activate the second part which is (the programs) or the various software, the first part can be considered as culturally neutral tools, while importing the second part and using it as it is- are considered process with cultural and civilizational effects, that's why we should focus on developing the Arabic educational software so we can be able of realizing the benefits of that important instrument and at the same time keep our cultural and civilizational uniqueness. Mandora1989:54. This study also includes presentation of the benefits of using virtual reality technique in teaching handmade weaving.

1- The need for the research and its significance:

virtual reality technique is considered one of the most important education techniques that has entered the field of handmade weaving education during the past 10 years due to the excessive use of its educational uses and its variations due to the high quality that it provided for the education system to overcome its problems and develop its means to reach advanced technical and educational results.

It may be appropriate to say that virtual reality technique was created in the beginning for non-educational purposes with the concept that we are familiar with now, computer was used for general purposes then for educational purposes after proving that the use of virtual reality technique in education could be an effective educational tool in the industry of handmade textile, as the use of virtual reality technique in education has developed extremely fast according to various use in the western industrial countries, as progressed countries couldn't achieve much progress. Some studies point at use of virtual reality technique as an educational mean in the Arab country hasn't been realized till now. ^{Al Kalla:2018, Mandora, 2018.}

The idea of virtual reality comes from the possibility of the disappearance of the teacher as he sits on his chair and goes to other world, an imaginary world where his dreams can come true. What we mean here isn't the disappearance of soul and mind in a real world that has been built to be wandered around it. You should see yourself teaching inside an exploded volcano opening around you while lava is flying around, or find yourself wandering around the respiratory system or vocal cords or contract and relax between the lungs, all that could be done while your body is still existing on a chair in front of your computer on your desk and that's what could be called virtual reality. ^{Ismael,2001:282.}

2- The research terms:**A-Attitudes:**

Are the psychological attitudes towards any concept or entity, that term was used to point to the psychological position of members of the teaching association towards dealing and interacting with the virtual reality technique.

B-virtual reality:

Is the transfer of humane conscious to hypothetical environment that has been created electronically through the liberation of the mind to dive into the execution of imagination or what is linked to it technically or ascetically away from the location of the body, which is a non-delusional and unreal world. ^{Ismael,2018:282.}

"Steuer" has identified it as a private pattern of experience that allows the individual to feel the living of reality not only dealing with instruments. ^{Steuer, 2015:73-93.} While the current study is identifying it as imagination with 3 dimensional realities that has been built by computer to mimic real or imaginary environments.

C-Virtual reality technique:

That technique is considered as a name that includes all what is about the technique of input, output and processing data and it includes devices such as (printers and computers) software (applications and activation programs) and developed means.

D-Virtual Alienation:

Many theoretical and applied studies that have appeared lately are pointing to the concept of virtual alienation as a variable that explains many non-positive towards the technique of virtual reality whether in the field of art or other fields. That concept is extended from the wide meaning of the concept of social alienation. Seeman ,2015: 2.

Social alienation can be identified as a state of psychological departing or exile from the society that some individual experience as a result of social and psychological circumstances. Schacht,1970:

³⁰ under the flag of such state lies a group of non-positive assumptions, feelings, and emotions towards the society. Seeman Seeman , 2015: 64 has created an integrated theoretical frame for the divisions of the concept of social alienation and its means for measurement. From the accompanying non-positive phenomenon to the state of virtual alienation is the strong resistance to intake virtual reality technique whether in the education field or any other fields. People of high level of virtual alienation fight the absorbance of virtual reality technique whether on the level of personal use or the use in educational institution where they work at.

E- Theoretical teaching:

Is educating students about virtual reality technique in the traditional way by explaining and demand of memorizing the terms of the required field to be studied. In this research teaching was based on the main principles of virtual reality technique which included historical background about the development of virtual reality technique and its techniques and ways of representing and processing of data inside the virtual reality technique.

F- Practical training:

It includes enabling teachers to actually interact with virtual reality technique and the use of software packages to build applications which despite being primitive but it shows a clear image about the benefit of the used packages to build it, and participating teachers of this study have been trained on software packages.

Second: theoretical frame of the research:**1- Genesis of virtual reality and its history:**

The technology that virtual reality has relied on of computer graphics, simulation and human interfaces-computer has been developing for the past 3 decades, virtual reality is considered as the fruit of researches in flying during the second world war, also computer drawings in the sixties, in 2015 (Iven Sutherland) has created one of virtual reality systems where he added vertical show devices. Zaytoun, 2015:363. In 1965 Sutherland has published a descriptive report with the title (Ultimate Display) which we now call (virtual or imaginary reality). This report explained that the ultimate display is a room where computer controls all kinds of material existence inside it and the individual can deal with virtual world through the right programs.

Gradecki , 2014 : 43

Sutherland couldn't keep that work as computer graphic systems at this time were representing a relatively huge start, but what he presented was like the foundation prick for virtual reality in the eighties and was the first nucleus that other scientists followed such as in North California university (Fredric Brooks) who has started experimenting and displaying one minute simulation for the molecular structure using virtual reality technique as he worked on

developing researches related to the technology of virtual reality in that university. Gradecki , 2014 : 44

Since Sutherland report with the definite features and his creation for the portable board (Ahead Mounted Display [HMD]), researchers have done their best to develop virtual reality technology in education so this technology could transfer the individual from just being able to deal with computers through desktop screens to dealing with it through the different parts of the user's body, which is the thing that allowed the user to be able to sail into the sea of virtual world and gain experiences from this world through their vision, hearing, touch and walk exactly as they do in real world. Brieken , 2015 : 81

Despite all exerted efforts at that time but the real start for virtual reality technology was during the eighties by the hand of the American scientist Tomas Furness and there was the first application of show head helmets in the American air force at Right Batros air force base in Ohio at 1982. Brieken , 2015 : 82

This technology was created for the purpose of offering help for individuals to be able to deal with data and information linked to design and can realize them easily in addition of providing different mean for understanding and realizing information and gain experiences dynamically and immediately and is also a tool for model building and problem solving that allow the possibility of experimental learning. Virtual reality is characterized by the presence of kind of interaction when this virtual reality is responding to actions and behaviors of the user but it also provides a degree of interaction that doesn't exist in multimedia programs compared to virtual reality which allows us to go anywhere and explore any location in the scene that we witness in the virtual world.

2- Concept of Virtual Reality:

Many researchers have tried to put definitions for virtual reality for clarifying the virtual meaning and its features, we can mention the following of them:

Jacobson definition:

It is a computer that gather sensual experience that encourage the participant to think he/she can't distinguish between hypothetical and real experience using computer drawings, images and voices to create electronic translation for real life situations. Jacobson, 2007: 49

"Grodecki" definition:

This definition is focusing on two main concepts that should be taken into consideration when identifying that technology which are:

- Limits of vision in the virtual world.
- Interaction with the surrounding things present in the virtual world.

For the vision limits, virtual reality should allow the user to see the virtual environment from any point or any angle or any point and it is considered an important thing as the user in real world has the freedom to roll his eyes at any direction with any angle to discover the surrounding environment, as for interaction, virtual reality should allow the user to interact with the existing things in the virtual reality. Brieken , 2015 : 84

Based on those two concepts Grodecki has introduced another formula for identification of virtual reality that can be summarized as:

That technology that allows the user to see the virtual environment from any point and any angle and is being capable of interacting with the existing things in that environment. ^{Grodecki,}
2014: 8-12

3- Components of Virtual Reality Technology:

Mechanisms of virtual reality require the availability of two groups of technology which are devices that allow computer to transfer scenes of virtual reality, also while building its programs or virtual reality shows. ^{Ismael, 2018:112.}

Components of virtual reality technology are divided into:

First: Hardware:

This as well is divided into two types of devices which are:

First type: Input devices:

These are the devices responsible for the input of data, information, orders and responses to computer devices which work within virtual reality technology system and include the following:

1- Keyboard:

It is considered one of the component of the computer system, identifying those keys and realizing their functions should be memorized by the user and the use of keyboard allows the use of most virtual reality applications of low cost.

2- Mouse:

It is usually used in Two- Dimensional Fashion to move a little arrow on the computer screen in virtual reality, regular mouse could be used in Navigation and controlling the virtual hand of the user.

3- Three-dimensional Mouse:

It could be lifted away from the office and moved in various directions at space, while computer still can recognize the position where the mouse is and deliver that data to do the necessary applications.

4- Joystick:

It is a familiar input tool to control the body motion of the user and the angle of his vision according to the direction he uses the stick, if the user wishes to move forward in the virtual world all he would do is to move the stick forward.

5- Data Glove:

It is a glove mad of artificial fabrics and enhanced with sensual devices of light fibers at its top parallel to each finger, when moving the finger inside the glove near or away from the hand, the light fibers are capable of telling the computer with how or what is the limits of bending fingers inside the glove and computer uses such data to show accurate images expressing the motion of the hand.

6- Trackers:

Gloves are used as tracking tools when the user is incapable of tracking the position where the hand can exist, in order to tell the computer about the position where the hand is, the purpose of those tools is giving the computer with values of coordination X , Y , Z that allocate positions of stuff in the space or deviations' values that things have and the degree of their leaning, spinning and inclination which are data that is difficult to give to the used computer in building

a virtual reality, using tracking tools that could allow the computer to change the angle of vision in the virtual reality according to the real direction that the user is looking through, there are many models for the tracking tools. (Ismael:2001,113).

- Ultrasonic Trackers.
- Arm –based Trackers.
- Magnetic Trackers.

For each of these models there is a special method for using that are different from the others according to the type of data and information that are supposed to supply computer with according to variations and designs that virtual reality environment should have.

Second type: **Output Devices:**

They are the devices responsible for showing data, information, orders, deductions and results of processing whether with a readable or audio or visible ways or mix of these methods and they are devices that work within the system of virtual reality technology which includes:

- 1- *Monitors:*
- 2- *Shutter Glasses:*
- 3- *Head –Mounted Display:*
- 4- *Caves:*

Second: **Software:**

Software specialized with virtual reality can be divided to:

A-Software Developers Tool Kits:

They are large libraries that contain many functional software that could be turned to whenever needed and contain also construction data for those software and ways of using them but they require of who is dealing with them to have a background about programming language in particularly C and C++ so he can design and symbolize his application according to what's available in the library. (Maria, 2007: 21)

B-Authoring Software Systems:

That kind of software can be used immediately once installed in the computer and they are called (System Ready Run Software. They are a whole software that have images and plans necessary to create virtual environment such as VRML. and Action Script. Most probably virtual reality software that are being made of other software are more accurate and faster than those which are made of authoring software, that's because programming cut some stages in the process of show translation into the machine language. (Maria, 2007: 22).

4-Advantages of Virtual Reality:

Virtual Reality can represent many tools to increase participation and interaction, also academic activities can use tools of virtual reality for self-learning, social projects, discussions and real trips, in addition that virtual reality allows natural interaction with information instead of reading about places that the reader can't see, Virtual Reality allows learners to discover new factors where Virtual Reality can introduce technical and educational experience in the field of specialty that many students think it is interesting which gives them a chance or a motivation to learn, Virtual Reality also can provide the necessary tools to imagine and form the absolute data as it introduces it in an understandable frame. (Maria, 2007: 23).

In addition to all what was mentioned, privileges of Virtual Reality can be stated as the following: (Maria, 2007: 24).

- *A learner in the field of handmade textile can discover real things without messing with the measures of sizes, dimensions and time.*
- *It introduces the education in the art field in an attractive way that contains fun, amusement and data coexistence.*
- *The possibility of the learner to interact directly with the experience that he wants.*
- *Enrich the process of education in the art field with experiences, potentiality and modern technology.*
- *Training learners in the art field to gain skills and technical stuff that are being hard to train for in real.*
- *Introducing a virtual environment to navigate through a 3D space.*
- *The manifested images enhance the deep sensual realization and space dimensions.*
- *Virtual environment achieves security for its user when studying dangerous information or hard to get ones timely and spatially.*
- *It allows learner to move inside the time and shows situations of the past or accelerate to show the future.*
- *Help the learner to achieve the required level of skills precisely.*
- *Interaction of the learner with virtual reality equals or even exceeds what can be realized in real reality.*

5- Traits of Virtual Environment:

According to ²⁰¹⁵•Brieken) (Byrne, 1991) (2004•Zeltzer) (2003•Bilia)• 1997•,Winn)

The main features of virtual reality or virtual worlds in handmade textile can be specified in the following axes:

A: presence and immersion:

Individual immersion in the system of virtual reality gives a feeling of being in the actual place for experience, he/she finds themselves in an environment where they can deal with its components through vision, listening or touching. In such artificial environment coexistence is to a high degree and sensation of immersion is highly strong to the extent that the user feeling of dealing with artificial environment disappears, and he can't differentiate between it and the real one. Users lose all their impressions and visions about interacting with a machine, this feature is reflecting the sense that user is doing experiments and gaining experiences as if he was in a real world and his sense of the machine participation in the situation vanishes.

B: navigation:

Where the user can be an observer or traveler in the virtual environment without moving from his place by many means such as walking, flying like birds or using vehicles, or touching something or walking into the direction of that environment, etc. (Brieken , 2015 : 91)

C: Viewpoints:

It expresses the user ability to change the angle where he sees the virtual environment through and moving his eyes at any place by any angle, for example: a user can cross the point of seeing something or a process that is given in the virtual world to a viewpoint of other participant, users can also have viewpoints through their flying or moving with any speed at any direction. (Zeltzer, 2004 : 22)

D: SCALE:

Measurements of virtual environment can be changed and changing the relative size of the users with what fits the virtual world, as they are allowed to get the size of bigger things such as a size of star or smaller things such as an atom.

E: Autonomy:

The virtual environment is considered a dynamic one with self-control when it is efficiently capable of tracking its goals and performing its functions without depending on the user interactions or paying attention to them. *Brieken , 2015 : 76*

F: User-Environment Interaction:

Where a user can adapt a wide range of means of manipulating or modeling with virtual worlds, where all virtual strings and things can be moved by hands, eye movements or voice, in addition of having the ability to synthesis or change a virtual environment. *(Brieken , 2015 : 23)*

G: Co-operative Learning:

That comes as a result of widely spread virtual environments at various places and enhanced with network to link among them which provides for many users the possibility of participating in using virtual environments at the exact same time, hence interacting at the same time among various individuals leads to a cooperative real learning. *(Brieken , 2015 : 12)*

H: Simulation:

Experience in artificial environment is being simulated exactly like the real experience where individuals are being asked to make decisions, solve problems and dealing with different situations under the circumstances and data provided by the artificial environment. *(Winn,1997: 120-12)*

6- Patterns of Virtual Reality:

There are many different classifications for virtual reality models, the most prominent of them are:

A-First classification:

In this classification we find Cronin *(Cronin, 1997: 253)* is classifying virtual reality according to the immersion character that virtual reality provides for user into 3 styles:

a- Non Immersive VR

Which is called (desktop VR) that means virtual reality that is being dealt with through computer screens, Cronin sees that this style is the most popular one and of least cost, it is a computer that produces a virtual world where the user can watch this virtual world manifested in 3D through the windows present on the screen, user can also wander through this virtual world by controlling devices such as (Mouse), Cronin adds that this style is characterized by its relatively low cost. *(Cronin, 2017: 254).*

b- Semi-Immersive VR

Cronin calls that style (Projected VR), this style allows many users to gather inside a room to watch a VR show on a big screen that leans towards them with wide angle that can reach 130, so it can provide the largest possible field for vision which gives the participant a relative feeling of merging with the virtual world that he sees in front of him on the show screen. Cronin sees that this style is characterized by providing a proper amount of merging with the components of virtual environment when compared to the Non Immersive VR, in addition that the large area

of the show screen gives better view for participants, besides the possibility of introducing the show for large number of individuals at the same time. But the flaws of this style as being seen by Cronin and many researchers are represented in during the show, the participant is aware the whole time of the existence of others despite his merging with all what he sees, this style doesn't provide the possibility of individual interaction with the components of virtual environment. (Cronin, 2017: 255).

c- Fully Immersive VR

This style can possess the individuals' imagination as it comes in top of all VR styles that through which, experiences are gained, it is consisted of optical show unit that is placed on the user's head which means the person inside the head show unit (HMD) is being totally isolated from the outside world and surrounded with the VR that has been synthesized, when this person turns his head, this virtual world moves according to that to give this person a strong feeling of coexisting with this virtual environment (Presence) and (Immersion). But such presence and immersion exceed according to the clarity of the introduced show through this system, the field of vision and the extent of modernity or oldness of the used images in the show. Cronin sees that the flaws of this style is represented in the weakness of screen clarity than the other 2 styles, which means that the ability of the show screen in this style is less than the previous styles in addition to presence of mechanical issues that lead to weakness in the graphic motion on the screen. (Cronin, 1997: 256)

B- Second classification:

In this classification Jacobson is classifying virtual reality into 4 styles:

- 1- Virtual reality that allows the user to deal with virtual world through computer screen which is called (Desk VR).
- 2- (Projection VR).
- 3- (Immersive VR).
- 4- (Simulation VR).

It is noticed that the first 3 styles in Jacobson classification are meeting VR styles in Cronin classification but Jacobson added Simulation VR which is considered one of the forms of the Fully Immersive VR. (Jacobson, 2017): 69-79).

C- Third classification:

In this classification Isdale introduces (Isdale, 1998). a classification for VR into 6 styles that are called:

- 1- (WOW) (Window on the World). It meets in the previous classification what is known as (Non Impressive VR) or (Desktop VR).

2- (Video Mapping):

Where a shadow image of the user that was inserted using video is being merged with 2D drawing designed by the computer, where the user can watch his shadow image interacts with the projecting virtual world through a TV screen that shows this interaction, this style is closer to (Projection VR) or (Semi-Immersive).

3- (Immersive Systems):

They meet of the previous design the (Immersive VR) or the Fully Immersive VR.

4- Telepresence:

In this style; the individual senses are linked to the remote sensory devices (Remote Sensors) by a (Robot) this robot is equipped with advanced technology that allow individual to deal with things that in real life can be faraway or dangerous or even impossible like studying the deep sea or examining a volcano, such style was used in (NASA) to create (Virtual Environment Vehicle) to train astronauts using motorized vehicles, also firmen and surgeons are being trained on them. (Isdale , 2018 :41)

5- Mixed Reality:

It is a reality that has been synthesized by merging more than VR styles (Telepresence) with any other style.

6- Fish Tank Virtual Reality:

It is a style that combines Stereoscopic Monitor Display, and Shutter Glasses) with mechanical tracking device placed over the head of the user that leads to presence of effects in the movement of the watched thing, which results in better system than the simple, embodied systems that are called (WOW). (Isdale , 2018: 33)

D-Fourth classification:

In this classification, Ahmed Kamel Al Hosary is classifying (2002). He classifies VR into 3 styles:

1- Pre- advanced Virtual Reality:

Most of characteristics of VR are provided in it in a minimal way, as for the necessary requirements for this style of devices and software, they are of low number and simple as regarding to the degree of complexity and development compared to the other 2 styles, the researcher calls this style (Pre- advanced) expressing that this style represents the primitive or primary stage of VR technology. (Al Hosary, 2002:14).

This style resembles and meets the (Non Impressive VR).

2- Semi-advanced virtual Reality:

Most of characteristics of VR are provided in it in a medium way, as for the necessary requirements for this style of devices and software, they are more in number and more progressed of those which are used in the previous style, researchers call it Semi-advanced as it represents the medium stage of VR technology. (Al Hosary, 2002:17).

This style resembles and meets;

- (Semi-Immersive).
- (Projection VR).
- (Video Mapping).

3- Advanced Virtual Reality:

Most of characteristics of VR are provided in it in a high degree but it requires many special equipment, in addition to the necessity of the presence of complex and developed software, researchers call it Advanced as it represents the highly advanced stage of VR technology.

This style resembles and meets;

- (Fully immersive VR)
- (Immersive Systems).
- (Immersive VR).
- (Simulation VR).
- (Telepresence).

- (Mixed Reality).
- (Fish Tank Virtual Reality).

Third: the applied frame of the study:

1- The importance of studying VR technique in handmade textile industry:

A lecturer (a member of the teaching association) faces a flood of data that is being coped with an accumulative shower among the sequenced generations of computers, which have imposed for the lecturer to improve his performance and himself as well as there is no place for a lecturer nowadays unless he is aware of computers and approaches of VR (VIRTUAL REALITY Approaches), knowing that there are many approaches through which VR software techniques are being classified. Each of them pays attention to the variant, subsequent and rapid development for computers, one of the most common and used classification is the coming quadrant classification: (Gotkin, 2014: 39)

A-(Programmed – Instruction – Based – Virtual Reality)

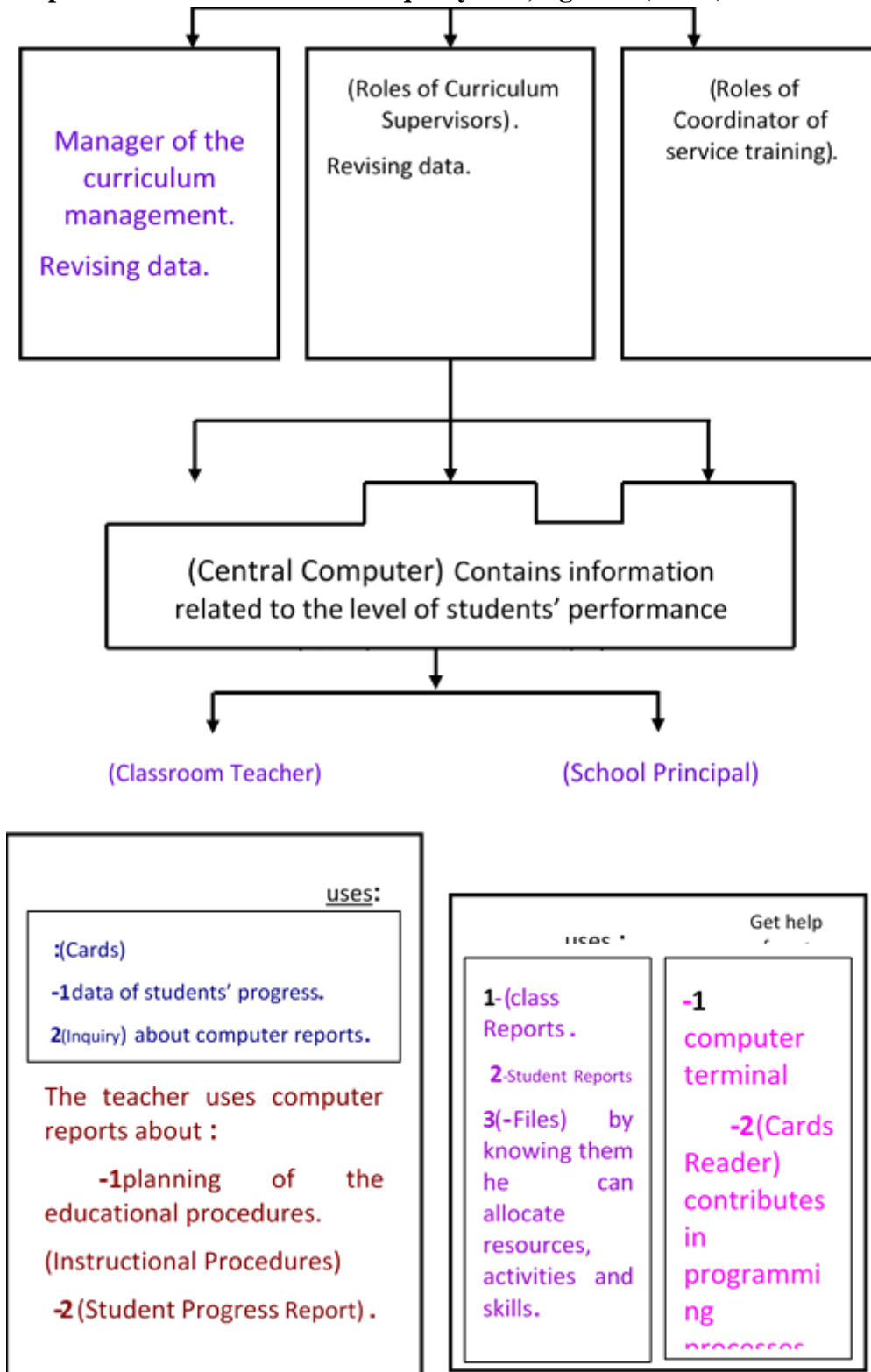
B- (Artificial – Intelligence – Based – Virtual Reality)

C-(Oriented – Simulation – Based – Virtual Reality)

D- (Application – Tool – Based – Virtual Reality)

Most probably those programs are classified as (Tutoring Programs) or (Practice and Drill Programs).

Figure 1 explains data flow in VR technique system, figure 1 (Roles).



(Flow of Information in VIRTUAL REALITY System)

2-Handmade textile industry with computers in the field of virtual reality:

Computers have come a long way in the field of design and have accomplished their goals and contributed in development and advancement of textile systems, as the weaver himself with his nature is always eager to benefit from science development and recruits them in fields and aspects of textile for what it has of yield in addition to what it can accomplish of advanced potentials. Computers are used nowadays in large number of design practices. Many foundations related to art or education or both of them have inserted computer techniques in factories or textile laboratories in a system using computers or graphics with assistance of computers. Statistics of the Egyptian association for computers points that number of computers used in the textile field or other related fields has multiplied in the past 5 years by 10 times, it's certain that those numbers are humble when compared to numbers coming from western countries. (Helal,2003:15)

1- Why computer is used in handmade textile in virtual reality?

If we examine carefully elements of handmade textile process in general, we find that it is clear that there are many elements of this process that impose upon us to wonder what has made the use of computers is sometimes necessary and most of the time is a must at most of situations regarding handmade textile, the examiner of this case can realize the coming variables. (Abd Albaky,2002:64).

- The complicated nature of the handmade textile problem.
- Handmade textile need for processing large amount of data and alternatives.
- Handmade textile need for continuous modification, development and performance accuracy.

2- Computer distinction in textile practices in virtual reality:

Computer distinction in the textile practices has provided capabilities and potentials that could have never been provided by any means in any other design tool that has been used by human, the most important aspects that distinguish computer in its relation with design rely in: (Raafat,1996:44).

1- The interactive nature of the relation between weaver and computer includes:

- Role of the weaver in direct confrontation with textile problems.
- Role of easy communication and interaction among elements of textile process.
- Providence of wider capability on realizing dimensions and size of the natural design.
- High variations in the form of inputs and outputs of textile.

2- Computer support for weaver's capabilities and complete aspects of incapability and shortage which includes:

- Support innovation capabilities.
- Support technical experience and provide high flexibility.
- Adaptation with textile variabilities.

3- Computer ability to respond better to environmental and humane needs in textile which include:

- Provide security factors and usage compatibility.
- Provide psychological considerations.
- Pay attention to modernity of the product and keeping up with the age.
- Provide means for advertising attraction.

4- Computer provides distinguished capabilities and new potentials that include:

- Repetition technique and performance mechanism.
- Simulation of textile variabilities and high storage ability.
- Work for long times with no malfunctions. (Klaus,1981:112).

5- Computer is distinguished in the production process which includes:

- Design of handmade textile and complex systems.
- Ease of construct, modify, develop and improve the product.
- Best use of resources.
- Avoid problems of activation, materials and threads.

3- Fields of textile with computers in virtual reality:

There are many fields of computer textiles, the most important of them in the general textile field is handmade textile, this type represents work axis for weavers, design of handmade textile almost has many sides of engineering design in addition to considering humane use and aesthetics of the shape which makes it a more comprehensive subject that absorbs more than what is included in the engineering design, in the following is a short explanation of these 3 types:

1- Textile design:

Computer here is just a simple tool yet new with special potentialities, an artist always considers the potentials provided by a machine or a material when working with it, as any artist always tries to widen the potentials of his tools in expression through his skills and qualification in their use, and the trial to discover new treatments and characters without trespassing the general frame specifying the potentials of his tools or his expression materials. Which can also be applied on computer as a tool in the artist's hands, based on that, artistic works produced by computers should be evaluated through the potentials of such tool. We can identify computer art as "any aesthetical shape resulted by dealing with the given data as analog or digitally with an assistance of electronic mechanisms of a computer". (class,1982:42).

2- Engineering textile design:

Using computer in engineering isn't limited to just engineering design for machines and equipment or systems, but it is extended to include all fields of engineering which include.

- Design (equipment, products, devices, systems and environment)
- Engineering and industrial drawing.
- Modeling and simulation.
- Analysis and evaluation.
- Manufacturing and directing the production processes.
- Quality control.

3- Cloning of handmade textile:

Design of handmade textile cloning includes a wide field of activities start with process of investigation, collecting and analysis of data then the process of ideas formulation and various trends in a prototype to the production processes then the follow up. Due to complexity of such processes and the large number of increasing data, it was necessary to pay more attention to processes of design and manufacturing using computers. It was clear that such processes need computer which by using it, computer allows to control and dominate all aspects of design and

production processes and give a chance to designer to perform or spare many different and various activities. (Shawky,2017:25).

Using computer in 2D handmade textile is useful when we benefit from computer capabilities in accomplishing the following: (Alcloub, 2016:74).

- Fast performance with wide variety of the possibilities to change, modify or retreat if necessary, that allows speed in producing many ideas, suggestions for one design without the need for redesign or clone.
- Wide variety and multiple means for inserting primary ideas, images and drawings inside computer, keeping the images which allows computer to send or receive images to or from a large group of other programs and various output tools, as computer allows dealing with graphic designs in their various forms whether (Bitmap Graphic) or (Vector Graphic).
- The process of interpreting shapes into special digits inside computer is easing processes of change or modification as an artist can change any element of those elements, the components of the shape can move or erased or rearranged, etc.
- dealing with smallest unit of an image (pixel) singular or in form of groups or even as a whole image with modification, addition, magnifying or shrinking and change light and color values is something that allows extremely accurate treatment and provides computer with the possibility to control all parts of the image or the drawing.
- Benefit from untraditional added techniques through various influences or selections that are provided by programs to add to the input image what cannot be added by traditional methods or what can take a longer time to be added manually than the time taken by computer in giving the same influence.
- Dealing with the image in its illustrated shape that consists of lines and curves that are known by coordinates called vectors and they are treated as a mathematical, rational relation (vector) in this case it summarizes the storage areas required to save it and provides a high speed in treatment.
- The possibility of merging 2 images in one or adding one part of an image in another one while giving the transferred parts a suitable degree of transparency, masks can be done in order to protect a certain part of the image from influences or color or the changes that are being don't to the entire image, or even influencing only that particular part. (Scott,1980:65).

3-Design education systems for handmade textile for virtual reality:

Andros and Judson stated at a research about analysis of models for education systems for handmade textile for virtual reality (Instructional System Design Model) that there are more than 60 models for design of models for education systems for handmade textile for virtual reality. Through the research it was found that there are 14 common functions in these models, we state them here to clarify the importance of knowing the education means to design educational programs in virtual reality for computer in education, those functions as will be clarified are reflecting the importance of determining the educational purposes and characteristics of learners in addition to other functions, (the researcher leaves the details of design education programs for handmade textile for virtual reality through those models to another research, here we should point at that such points aren't organized sequentially as they aren't representing a certain model but they are describing the common points of those models).

Those models have in common:

- 1- Determine major goals and partial ones in a way worthy of being observed.
- 2- Determine needs, localize the main problem and determine qualifications and required trainings.
- 3- Development of primary measuring test and the final test to be identical to the major and partial goals.
- 4- Analysis of major and partial goals for the required educational skills.
- 5- Arrange goals sub sequentially to ease the education.
- 6- Identify characters and qualities of learners regarding age, sex, educational level, practical skill, readiness to learn or incapability and finally estimation of accomplishment of previous and current goals.
- 7- Determine educational strategies for virtual reality to match the curriculum and learning demands.
- 8- Choose the virtual education means for strategies to be accomplished.
- 9- Develop programs using specified strategies.
- 10- Put an experimental test for programs of virtual reality for learners to diagnose mistakes and determine the required modification.
- 11- Develop procedures and tools for actual application in addition to continuous maintenance.
- 12- Consider the possibility of finding alternative solutions for the education approach.
- 13- Construct system and education environment and determine obstacles.
- 14- Determine cost of VR technique in handmade textile.

4- Applications of virtual reality techniques in handmade textiles:**A-Drill and practice: applications between convenient or inconvenient:**

Programs of practice and training are the most used VR programs in handmade textile and it is also possible that those programs are the highly criticized ones, some of that criticisms are justified because most software of training or practice programs are weak and of short term in addition to using them doesn't require hyper software skills which lead to the availability of information about the written results which create sort of connection to the simple user and provoking the innovative user while frustrating users of the system who are willing to develop skills and activities of its use and actually apply it for real in the field of design. (Myers,1966:74).

Programs of training and practice use flash cards, number of users of such programs inquire about the point of their use in fields with effective activities like field of printing or publishing that basically rely on answer models that can realize kind of excitement in educating or learning specific curriculums. Some of users of the system think that programs of virtual reality technique which rely on programs of practice and training fit the (higher perceptual standards) besides it fits digital and mathematical calculations that its learning or teaching require perfecting specific professional skills (Abd Albaky,2002:81).

Researches and studies and actual practices, in the field of application of programs of virtual reality technique, have proven the significance of using training and practice programs in teaching fields that include:

- Effective, interactive subjects that require high level of thinking and cognition.

- Concepts of tele-communication that are linked to effective dialogue activities and skills (conversant).
- Connected to activities of (Instructional Alternatives) and (Implicit Skills and Activities) that have direct relation with the actual applications of a system or a teaching approach that depend on high level of interaction means that require type of connection characterized with flexibility and (Effectiveness).

There is a study made by (Alderman), (Swanton), and (Braswell) in 1998, has clarified that some (Inappropriate) applications of programs of virtual reality technique in the field of practice and training, the study was based on Mathematical Concepts and how effective they are, the study reached many results the most prominent of them that success or failure of applying programs of training and practice in education that rely on VR are based on:

- Type of raised questions and answers in the program and how committed they are to the methodological, sequential context.
- Type of experience of teachers and lecturers and how far they are aware of the used system and the significance of using it.
- Type of integration in the curriculum activities and how they fit the practices with diversification of levels of those activities.

Most of workers in the field of VR technique in various other fields of education have benefited of the results of this study, the actual practice of the training and practice program has added a new suggestion that was represented in the necessity to use Virtual Concept Exhibition Model that help in modeling activities and skills, the significance of using such model in the program is due to its effectiveness in the positive influence on accomplishments of teachers and students for what is related to means of improvement in the levels of education performance by teachers or lecturers (members of teaching association) and students.

Managing programs of training and practice requires the availability of managerial skills that are linked to the processes of learning and teaching, knowing that rarity of usage or absence of such skills lead to creation of a dull education environment that doesn't help in achieving the aimed goals of applying the program. The responsible for executing the training and practice programs in the VR technique should consider that skills that are linked to the program are considered secondary skills when compared to skills and activity of running a classroom, that's why a plan should be prepared that includes determine the time rates that are used in developing both types of skills with what match each of them and their roles in the processes of learning and teaching. A study made by Winston in 1991 has determined reasons of failure of some training and practice programs in the VR technique are due to: Anderson, 1997: 42

- Low level of usage and application of management skills.
- Most of benefiteres and users of the program feel frustrated when hearing the voices coming out of the device in case of wrong responses by the students.
- Lack of knowledge about training and practice software by teachers or lecturers.
- Teachers or lecturers lack of consideration to managerial responses of the students in case of responses whether they are correct or false responses. Winston thinks that there is a difference that distinguish the nature of the computer device and the nature of the lecturer in the field of using training and practice programs, such difference is due to the device doesn't get bored of repeating the performance of a certain part of the program, or when dealing with a reaction of

the students' reactions, that character is one of the advantage of using computer in the general virtual reality technique programs, and training and practice programs) particularly.

B- Characteristics of drill and practice programs in VR:

Drill and practice program is characterized by its ability to deal with basics of building and developing programs, the process of developing virtual reality technique programs faces many challenges, the most highlighted ones are:

- The necessity to choose activities that previously match the goals.
- Introduce level of education service that fits the level of the lecturer cognition on one hand and level of complexity graduation in the curriculum on the other hand.

Characteristics of drill and practice programs can be determined according to the coming fields:

- Field of educational activities in handmade textile:

Most of people responsible for managing and planning of drill and practice programs can't understand the nature of mistakes resulting from using and applying such programs, they think those mistakes arise from the user lack of knowledge about means of its development and what are linked to them from points of strength in managing computer and in reality they overcome the facts that such mistakes are linked to that the responsible managers lack of understanding of the goals of the approach in particularly educational goals and what are linked to them from activities and skills generally. (Silbert) has pointed at that point in 1999 saying that teaching as a work starts by performing some voices that are represented by number of letters described as the (Smallest Meaningful) unit. Once students are acknowledged with these letters, they start forming meaningful words of each group of them, which is followed directly by putting strategic basics for teaching those words or each group of words, the more a student reads those words each time the more he becomes able to identify them and the rest of them faster.

(Samuels) pointed in 1990 that the process of teaching is dramatically affected with (Phonic Approaches) (Barringer, 1989: 39) and also (Visual Oriented Approaches). He also suggested many strategies to understand the content of field of educational activities in technique of virtual reality which are: (Briggs, 1998: 34)

- (The Whole Word Strategy) is linked to the means of identification of words in terms of that they represent meaningful units and they represent visualized units and he pointed at the necessity of continuous follow up for means of learning development and rates of using each one of them in case of system desire to identify new words or concepts. (Words Characteristics Strategy) which is a strategy for learning that rely basically on the length of the word and the possibility of determining it and means of identifying the actual use of those words. He pointed that applying means of training and practice rely on (Definition) and (Recognition) which are considered essential for use and application of that strategy effectively:

- Strategy of shape of words in handmade textile:

Which is a strategy depending on shapes, drawings and shades and what are linked to them of techniques and media. He pointed that such strategy is developed and matches the modern uses for organizing means of communication in the learning process and he recommended the necessity of distinguishing between the shape as a function and the shape as a meaning and as

a mean for Recognizing Performance. The process of evaluating the use of any of those strategies in training and practice programs depends on multiple factors including: Brenner, 1999: 18.

- Type of program and what it includes of skills and activities.
- Type of devices used in the program.
- The used software in the program.
- Methods of identification of levels of development of students' performance in the program.

- **Interactive Structure Activities:**

Media of modern technology allows the choice of type of activities that suit programs of training and practice in handmade textile which cope with levels of skills and cognition of students. Programs of training and practice use many modern techniques in design, the most important of them are: Class, 1992: 15)

- (Voice Mail) technique.
- (Electronic Mail) technique.
- (Video Disc) technique.
- (Fax) technique.
- (On line Database) technique.

The use and execution of each technique of these techniques in the field of training and practice programs, require many managerial and technical procedures, the most prominent ones are: Baker, 1998: 23.

- Determine the responsible of managing the program.
- Determine price of the program cost.
- Determine location the program execution.
- Determine training means of the program.
- Determine of evaluation means of the program.

5- Program of training and practice of handmade textile in virtual reality, the most prominent examples of such programs are:

1- DLM academic program:

It is a program related to teaching math and languages arts, it was designed by both (Thompson and (Shaffwell) in 1983. The program allows the user to benefit from computer capabilities in learning 6 arts of a language which are names, pronouns, verbs, prepositions, adverbs and Affixation which includes Prefix, Suffix and times. The program also allows the user to learn simple calculations and some upscale math. (Engelmann, 1992: 30).

2- (Hartley Program) is a linguistic program connecting to methods of correcting grammars and provide teacher or lecturer and student with many practices for the right use of words and it includes 2 discs one for introducing the program, it includes practices and trainings while the other includes means for performance variation. The program follows the sequencing approach in presentation or evaluation and it is considered one of the most commonly used programs and to some extent it is considered of low cost. (Evans, 1999 :27).

3- Darts program:

It firstly appeared in 1985 and it includes many practices in the form of games and it is considered one of the most commonly used training and practice programs in raising up (Pre-

School Children) through the use of miniature computer in design, enhancement and feeding forms are taking the formula of musical sounds, animal shapes and expressive, clarifying drawings. The program is characterized by simplicity in its procedure, some of the fields that the program is being used at are reading, learning letters and digits and it is basically used in Language Learning for Beginners. (Baker, 1998: 35).

Tutorials:

The school program(Tutor) is considered the most famous training and practice programs in technique of virtual reality, the capabilities of this program vary to fit the various subjects and age stages, many programs were created that use: (Butler, 1989: 28).

- o (Artificial Intelligence System).
- o (Intelligent Tutor System).

The programs of those systems have become available for use at all fields of education.

(Oregon Trail)

It is a training and practice program that is related to (Simulation). Applying the program has started in Aragon university in America in 1980.:

The program includes many teaching approaches that are being applied through simulation at many design situations such as:

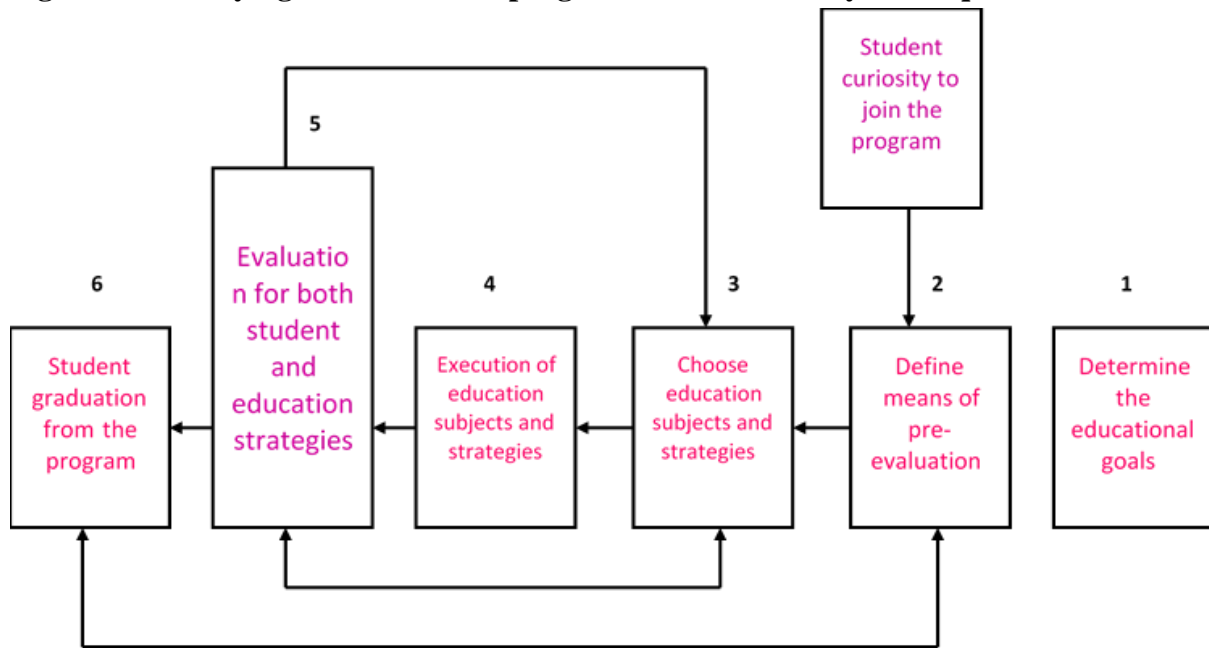
- o (Theoretical)
- o (Applied)
- o (Team)
- o (Distance Learning)
- o (Communication)
- o (Volcano)

It is a training and practice program related to (Simulation), it is activated by 2 or 3 people at the same time and it is considered one of the most used programs in the field of scientific research in the technical field, the program is achieving many goals, some of which are:

- o (Integration) in the teaching process.
- o Communication among (System elements).
- o Development of (Academic concepts and Skills).
- o Realization of (Prediction Styles).

The process of using the program requires the availability of special devices and techniques and it is the program of the highest cost among training and practice programs, the program has modernized integrated electronic communication systems so the individual by using them can get a particular information service related to the field of his work or expertise.

Figure 2 is clarifying an educational program in virtual reality technique.



The program management determines policies -4 of execution of education subjects and strategies.

put standards and specific, clear formula to -5 identify progress of level of students' performance.

The program management determines standards of -6 evaluating students' performance and education subjects and strategies.

Model of the educational program consists of the following elements:

specify the program activities as goals and units. -1

students are allowed to join the program after -2 passing(Placement Test).

participation of students and lecturer in formulizing -3 . education subjects and strategies in the program.

Clarifying a model for educational program in VR technique in handmade textile.

It is clear after knowing means and styles of virtual reality technique that its results and applications don't minimize the significance of teachers or lecturers despite the fact that most of them targeting to achieve integration in teaching and learning handmade textile and its industry. The process of using and applying systems of VR technique programs by a lecturer requires from him/her to be total aware of means of total and integrated understanding of the curriculum, skills and activities so his style of using and applying the system can be effective. The value of learning which relies on virtual reality is connected to the type of its products and the capability of the teacher to achieve integration between the product and the educational goals. From the actual application it is clear that the effective use of programs of virtual reality technique in design depends on:

- (Introductions) and presentation of concepts.
- (Reinforcing) concepts introduction.
- (Generalizing) concepts.
- (Efficiency) of lecturer and teacher using the concepts.

6- Use of virtual reality technique in learning handmade textile:

Norman wats suggested 12 usages for virtual reality technique in education in general and in handmade textile in particular, Roux added the 13th one and the last, these usages are:

- 1- Managerial usages which include accounts, files of employees, students' attendance, and grades and putting time tables, etc.
- 2- Usages for planning curriculums, which include references and data files, materials production and educational means.
- 3- Usages for profession development.
- 4- Usages for school libraries or information centers.
- 5- Usages for scientific researches.
- 6- Using virtual reality technique as a guide and special usages that include professional consultation in addition to consultations for evaluation and analysis of data.
- 7- Usages for school tests that include putting questions, grading, evaluation and analysis of results.
- 8- Using virtual reality technique as an assistant.
- 9- Using virtual reality technique to run the process of teaching.
- 10- virtual reality technique that assist learning.
- 11- Computer literacy.
- 12- Computer science.
- 13- Education coordinator which includes sharing information and coordinates among education associations. (Alan Roux: 1981:40).

7- The research methodology:

A-The sample:

The study was performed on a group of members of teaching association in departments of art education at faculty of quality education, 50 members have participated in this study, 40 of them completed the answers for the questionnaire pre and post teaching and training, while the remaining 10 have answered the questionnaire only once, either pre or post treatment. The table no. (1) clarifies the descriptive statistics of the sample:

Table 1

<i>Standard deviation</i>	<i>pairing</i>		<i>The average</i>	<i>Clause</i>
	<i>The highest</i>	<i>The lowest</i>		
3.19	38	18	22.4	1- No. of training hours.
27.54	162	-	38.1	2- No. of study hours.
2.90	20	2	4.53	3- No. of hours for computer curricula
0.635	4	1	2.28	4- Accumulative rate.

It is clear from the table that the difference between the highest and the lowest limits is actually wide, which results in a weakness in the followed education system, which means that teaching and training hours are considered not enough regarding the use and teaching of virtual reality technique in textile field.

While tables (2,3) are clarifying an analytical description for the distribution of the answers of members of teaching association who participated in answering the questionnaire, one third of the participants have pointed that they have an idea about virtual reality technique, while 38 ones have expressed their intentions of using virtual reality technique and those represented 76% of the sample, 66.83% of participants have clarified that they have never used virtual reality technique, while 17 participants have used it on intermittent periods or for a little time and their percent is 33.17%, 22% of them have clarified that they use virtual reality technique for entertaining purposes and 24% have declared that they have no intention in using it at all.

Table (2)

<i>percentages</i>	<i>Number</i>	<i>Clause</i>
33.17%	17	1- Use of virtual reality technique.
66.83%	33	2- Not using of virtual reality technique.
76%	38	3- Have the intention to use virtual reality technique.
24%	12	4- Don't have the intention to use virtual reality technique.

Table (3)

*Samples have been taken from faculties of quality education in (Mansoura-Met Ghamr-Tanta- Zagazig-Damietta).

<i>percentages</i>	<i>Number</i>	<i>Clause</i>
15%	7	1- Not using the technique in field of textile.
53%	26	2- Minimum use of technique in the field of textile.
10%	5	3- Much use of the technique in the field of textile.
22%	12	4- Only for entertainment.

B-The search tool:

The directions of opinions towards the use of virtual reality technique in textile have been measured by using the hypothetical criterion of alienation, table 4 clarifies vocabularies of hypothetical criterion of alienation of which include 20 vocabularies. It was asked from the participants to choose the range of their approval or disapproval to each one of them, the level of approval was determined with 5 levels, its highest level is extremely agreeing which represents no. 1, and its lowest level is extremely disagree which represents no. 5, sentences haven't been arranged on the same pace, but the researcher has considered changing directions of the sentences that some of them are within the positive direction towards virtual reality technique in textile, that include sentences no. (1,3,4,6,10,11,12,13,15,17), while other sentences have been towards the negative direction which are no. (2,5,7,8,9,14,16,18,19,20), after performing the appropriate analysis, the hypothetical criterion of alienation was calculated that the high sign indicates a high level of criterion and vice versa, the closer the sign towards the highest level the closer towards the negative direction towards virtual reality technique.

Table (4)

Ratio	Description	م	Ratio	Description	م
0.318%	The use of virtual reality is fun itself.	11	0.451%	I feel that virtual reality is controlling me instead of me controlling it.	1
0.591%	Use of virtual reality causes more troubles than its benefits.	12	0.270%	Virtual reality deprives me of my humanity as if I was a digit space.	2
0.545%	I harmonize with the use of virtual reality.	13	0.570%	I can clearly understand how to use virtual reality.	3
0.537%	I can clearly understand techniques of virtual reality.	14	0.194%	virtual reality can't control feelings.	4
0.439%	I use virtual reality even if I am not asked to.	15	0.431%	Just thinking of using virtual reality makes me feel worried and anxious.	5
0.423%	Working with the complicated virtual reality.	16	0.554%	I don't feel helpless while using virtual reality.	6
0.486%	virtual reality software are easy to use and flexible.	17	0.375%	Virtual reality encourages unethical practices.	7
0.387%	I don't care about what people say, virtual reality isn't for me.	18	0.219%	I cannot get terms of virtual reality.	8
0.519%	I don't like to work based on virtual reality instructions.	19	0.253%	My work should be modified to fit virtual reality.	9
0.492%	There are big differences between the real advantages of virtual reality and the announced advantages.	20	0.318%	Virtual reality shouldn't be modified to fit my work.	10

To test how fixed the standard is regarding the nature of using virtual reality technique in design, Cronbach alpha coefficient was calculated which has reached 93% using statistics groups of social science which is a pretty satisfying level and matches the previous studies that have used the same or similar coefficient and the percent has reached 92%, the performance stability was confirmed through calculating the internal consistency as the correlation coefficient was calculated for each vocab and the tool after removing the vocab from it. Table 5 clarifies the correlation coefficients and it is clear that all processing has statistics significances at level 0.01, which indicates the stability of the tool, and for that a test of the tool credibility through calculating the relative honesty by studying how the coefficient is related to other coefficients close to it, a positive relation with statistics significations at the level 0.005.

Table 5

statistics significations	coefficient	The variable
Significant at the level 0.005	0.205	- Middleton's criterion of alienation
Significant at the level 0.0001	- 0.381	- level of satisfaction about virtual reality experience.

Table 6 clarifies analysis of the contrast pre and post teaching and training on virtual reality technique in textile whether among groups or inside groups, it is clarifying that there are no differences with statistical signification pre and post teaching or training, as the average is close which means that there is no effect on directions of opinions due to teaching or training, the researcher in this field has to consider the technical background of the participant and if he has studied virtual reality technique or trained on it or not, as this has an extremely significant effect whether theoretically or practically.

Table 6

Value of F	Average of squares	Sum of squares	Degree of liberation	Source of contrast
01.97	96.20	96.20	1	Among groups
With no statistical signification.	48.72	9792.40	201	Inside groups
	144.92	9888.55	202	The sum

Table 7 clarifies that practical teaching and training in the field of using and teaching virtual reality technique in textile has an effect on the average of criterion of alienation and change in opinion direction to be positive towards using and teaching virtual reality technique, the presence of correlation rate with strong statistical signification among number of training hours and level of alienation confirms the sureness of that result. Pearson's correlation coefficient which has reached -0.185, with statistical signification at level 1% is considered the experimental proof to that.

Fourth: evaluation of programs of virtual reality technique in textile:

The need to establish rules for evaluation of programs of virtual reality technique in education field in general and textile field in particular represents a necessity especially for workers in fields of education whether at schools or universities due to:

- 1- Limited budgets specialized for computer use and application.
- 2- Lack of workers' experiences as regarding computer use and application.
- 3- The available large amount of computer programs and lack of knowledge for workers about their use or applications.

Schneiderman mentioned that there are no fixed basics or rules that can be counted on in performing an evaluation for the used programs of virtual reality even at centers with long history in the field of production and marketing such programs. That's why the measurement of programs quality has become an urgent case that requires kind of study and search and it

increases as the programs increase and the rate of its development, that's why the question now that requires an answer has become:

1- What are the quality standards of programs of virtual reality technique in textile?

To answer that question the researcher thinks that there should be some determinants of the coming considerations:

- 1- The educational application of the program.
- 2- Points of strength and weakness in the various programs and specialties.
- 3- Functions of programs and their costs.

In addition to those considerations, the process of selection of assisting educational subjects is considered necessary and it depends on the specialized budget for programs and how they fit the development in the updates in the field of media and types of functions and roles that such media can perform in programs, and how convenient those programs for means of solving problems in the education field, knowing that many workers in the field of education whether the responsible or members of teaching association don't have enough knowledge about methods and organization of programs of virtual reality technique.

Besides that, the actual application requires determinants, we can turn to members of teaching association and those responsible for the teaching process of such programs to recognize them and ways of measuring performance to identify their development and the obstacles that stand against executing the required targets of the program.

2- Steps of evaluation of programs of virtual reality technique in textile:

- Steps of evaluation:

The process of evaluation of programs of virtual reality technique in education passes through 3 main steps which are:

- 1- Classification of both education application and environment that the program will be used at.
- 2- Specify points of strength and weakness.
- 3- Do comparative determination of the efficiency of program cost.

- Defining means of applying the evaluation:

We should search for a clear answer for the coming questions when trying to determine the method for applying the program evaluation in the education field.

- 1- What is the type of program required to be introduced? What is the study stage it was designed for? What is the behavior of teacher and learner in it?
- 2- What is the education role of the evaluation? Are there any specific professional roles for the programs? What are activities and skills that the program acquires to develop? What are the methods that can be followed for realizing those goals?
- 3- What is the type of learners benefiting from the program or its users? What are the basic skills and activities for it? What are the type of the basic and assisting education materials? What are the needs for each one of them in executing the program?

- Program utility:

In order to identify the program utility that rely on virtual reality technique, 3 main concepts have to be introduced first:

- 1- Education (Effectiveness) for curricula and teaching methodologies.
- 2- (Maintenance) of educational subjects used in execution.

3- (Availability) of executing techniques in realizing targets of the content.

3-Education effectiveness for curricula and teaching methodologies:

In order to identify education effectiveness for curricula and teaching methodologies that are being used in the program which rely on virtual reality technique, the following must be determined:

- 1- Characteristics and features of program units.
- 2- Means for content analysis.
- 3- Ways for accomplishing performance levels.

The most effective factors in the education efficiency for curricula and teaching methodologies in virtual reality technique are:

1- Descriptive features for effectiveness of virtual reality technique:

To identify the features of a program efficiency, first features of used system should be determined and the ability of each one of them to execute the used ways in the pursuit of achieving the required goals of the program and their effect on modifying the methods of performance for the learner, the level of effectiveness in the form of steps that determine means of interaction and written reports are prepared about levels of interaction in each used Paradigm, determining those levels leads to the ease in recognition of accomplishment or progress in the learner performance in the program.

By updating the responsible people with such reports we, points of strength and weakness can be recognized and the contribution of (Teaching Characteristic) in achieving elevation or downgrading in the way of certain performance in the program. The process of measuring the effect of teaching characteristics on the learner performance is considered one of the most important process that determining its (Internal and External Frames) should be confirmed.

2- Teaching Staff Conduct:

The program must have effectiveness and excitement so it becomes more likely not only for buying and selling but also for application and actual use. Both relations between effectiveness and excitement on one hand and learner needs and demands of education process on the other hand should be considered, as such relation is considered important in its influence on teachers whether those who have experience and knowledge of computer or who don't have neither knowledge nor experience).

3- Effectiveness with Learners:

The program designer should have clear, subjective and total awareness of the answer about the coming question before starting in producing the program; what are the demands, needs, skills and activities that the learner needs to develop through using the program?

The presence of a satisfying answer about that question supplies the program designer with basic role that can contribute much in electing effective basics and activities that the program adopts and help on realizing those demands, the designer also should be aware of teaching methods so a type of active matching can be realized among the teaching methods and means of developing skills or activity through the program.

4- System Software Maintenance:

Standards of computer maintenance should include basics, through which modifications can be done by deleting or adding to ease the coping with the updates that can be done in the used teaching method, as this help the teacher to immediately determine the requirements of developing skills and activities of students, a kind of flexibility should be created in the maintenance procedures in the education programs such as the procedures in commercial programs. A school or foundation which is about to start applying an education program depends on virtual reality technique should ask the producing company for lists that explain methods of maintaining software, and lately companies and foundations producing education programs depend on virtual reality technique started to produce Software Package that has the basics and methods of software maintenance.

5- Devices features:

Many basic features should be available in the devices that are being used in virtual reality technique programs, the most important ones are:

1- Companies designing and producing devices used in virtual reality technique programs considers:

Fixed basics to determine possibilities of carrying and transferring devices from one place to another, also they consider steady maintenance of the used programs systems.

As for printers they can be changed according to the appropriate form that suits the method of execution or actual application of the program. Many education institutions have started to perform studies and various researches of methods for developing systems of used devices in virtual reality technique programs with considering the required modifications or changes and how convenient they are for development means and their ability to cope up with the technological updates.

2- **Cost:** Companies producing virtual reality technique programs and foundations that execute or apply the program consider the cost factor as it is considered a basic in the choice of the program type, the selection process also depends on the availability of trained and experienced personnel in the field, in addition to that the process of the actual application and its conditions are considered the most prominent process that should be focused on, that's why the responsible for virtual reality technique programs advice the education foundations about the necessity of determining requirements of use, and the anticipated budget that has been customized for the program before starting to execute or use.

4-How to perform Virtual Reality Program Evaluation?

The process of evaluating programs depending on virtual reality technique requires multiplicity of experiences of the responsible for practicing the system so they can keep up with the needs that by recognizing them, it is possible to make an effective and influencing choice of the program, the evaluation process requires determination of the coming skills and activities:

a- (Initial Testing) skills: through the availability of this skill the following can be determined:

- 1- Means of program application.
- 2- Means for program evaluation.
- 3- Type and quality of the program.

4- Clarity of purposes served by the program.

b- (Review and Testing) skill: through the availability of these skills the following can be determined:

1- Type of field that the program is required to be used in.

2- Type of curriculum that the program is required to be used in.

c- **(Synthesis and Preparation) skill:** through the availability of these skills the we can determine basics and means for analyzing skills and activities that program is used for their development, that skill plays a basic role in performing the process of final evaluation as it contributes in defining summaries or abstracts for the type of data that are being used in the program for explanation, clarification or analysis.

5- (Program Evaluation Form):

The two researchers have created a form for evaluation of virtual reality technique programs in the education field in general and in the technical field in particular, they have used previous studies and (Review of Literature) of virtual reality technique. The researcher also has read some specialized references and articles of the same subject (references are available at the end of the research), this form can be used by the responsible for preparation of such programs and those who are responsible of executing them. The coming is a brief explanation of the form:

1- Description of the form:

- The first paper of the form includes the program name, name of the publisher and price of the program with other general information.
- The form has been divided into 4 main fields which are:
 - a- (Content) b- (Design).
 - c- (Management) d- (Use).

The evaluation of those fields is done in pentagonal shape with 5 points, starting from the most important to the least important. The suggested evaluation form also includes data related to methods of storing information with what is related to it from data that can be obtained from the teacher guide or the activity guide inside the classroom. The program guide should include a description of the required device to be used in the program and the method of activating it and the used media in applying the device and the benefit of each one of them.

2- Fields of virtual reality technique program Evaluation Form in textile:

- Content of virtual reality program:

A space was added to the field, under each standard of it so to add an explanation and description for all components of the program, vocabularies of content are being evaluated and the various other fields in pentagonal shape which is (excellent- very good- good- accepted- weak).

A- Vocabularies of content:

They include the following:

- 1- (Defining Objectives): that vocab includes the determination of education goals that are required to be achieved by those programs and how clear are those goals and how can they keep up with skills and activities that are being developed through execution of the program.
- 2- Determine (Audio – Visual) goals clearly and show (Instructional Materials) and how they match the use and application and their ability to develop skills and activities.

- 3- (Defining External Activities) in an effective and appropriate way and identify how convenient those activities for the used skills in teaching methodology and the program capability on deleting, modifying or adding skill to realize (Integration).
- 4- Define the required skills in a clear specific way: identify how convenient means and methods of the used programs to develop those used skills and means and how skills match (Media) development.
- 5- Determine the content clearly and subjectively: by determining the content, operational means can be identified through which the applied performance of the learner can be elevated.
- 6- Determine means of transferring the program content: that helps in realizing sort of (Communication and Integration) in executing the required goals with consideration of the terms of the transfer process which are (Technical) (Scientific) and (Managerial).
- 7- Define means of (Validity and Reliability) of the program content, that process helps in selecting the type of (Media) and (Materials) that contribute in achieving the goals and the required ones from the program.
- 8- Determine the level of program vocabularies: that standard is considered essential and vital as it leads to defining means of recognition of performance levels and how those vocabs are matching the content, that's why most programs consider the process of supplying the benefiter of the program or the user with a guide that helps in determine the level of vocabs of the program content and what it requires of skills and activities.

B- Design virtual reality program:

The process of textile is pointing to the method or approach that by following it a communication between the program and the learner is achieved, vocabs of design field includes the following:

1- Specify program instructions:

By following such instructions, a kind of interaction can be achieved among the learner, image and text, programs vary in the ways of introducing practices and trainings but they all agree on the necessity of classifying learners' responds to recognize the progress of their performance.

2- 2- specify methods for program use:

Because the program is basically designed to enhance education, most educational subjects that are being used were designed to be used by the student or the learner, those programs give multiple chances for the students for selection.

3- Specify methods for dealing with the program:

Program units are representing teaching tools through using them, a kind of effective responds for learners is realized, those tools also contribute in introducing types of remedy for many study problems that students can face in addition that they can participate in presentation and explanation and clarification of scientific concepts in an accurate simple way.

4- Specify methods for showing results:

The program locates many methods and ways that student or learner by following them can look for formulas and alternatives that ease the process of reaching the correct answer and use many program software packages that include many questions models and such software consider graduation in introducing questions, the process of benefiting from those software depends on the type of practice methods and used media in the program system.

5- Determine the respond of the student:

Most of VR technique take into consideration to follow methodological means that ease for student or learner the means of benefiting from the system as it helps to select the best means for dealing with the used media, through identification of students responds the best means for identifying the progress in performance of a particular educational skill or activity is recognized.

6- Determine means for linking education subjects:

Most VR technique allow the realization of communication among device or the used media in the device and learner, as it also contributes in realizing a kind of feedback that help learner to achieve better performance in responds, in addition to allowing tests variety in field of activities, skills and means of their manipulation.

7- Specify means for review and control:

That standard is basically applied to on programs of teaching methodologies as the process of developing the used ideas in text book is done, knowing that programs aren't subjected to measurement and not easy to be handled that's why program management considers the necessity of introducing subjects in an integrated methodological form that is directly linked to what the student is actually studying.

8- Specify means for modification of program vocabs:

That is being done in a periodic manner according to the program requirements and the needs of benefiteres or users with what match its purposes.

9- Determine methods of display:

They include use of graphics, voice, picture with consideration of media selection that match the display of each one of it with what cope with the available capabilities of the system and cope with learners' potentials and how they are aware of the program and the content it offers.

10- Determine methods of feedback:

That method depends on determination of quantity and type of students responds and factors influencing them, some program managerial departments created forms to measure level of student performance according to style of responds that the introduce, the use of such form contributes in developing the used program systems for what's good for student or learner.

11- Define learning strategies:

That process depends on locating all used media in the system and skills and activities required to be developed in addition to determination of types of study and education subjects that the program is being used at and the stage that student is studying at.

12- Determine methods of application availability:

Most responsible for education look at VR technique programs as practical programs which its mean is methodological scientific theory and its purpose is the actual applied practice, in order to determine means of application of those programs, ways and understanding levels, application, analysis and measurement of education and study subjects should be identified.

13- Determine methods of program processing:

That requires from students to know what is expected from them of performance levels with the use of computer programs as it also requires from teachers and lecturers to identify the methods of level of performance progress in programs.

14- Specify clearly types of regulated displays:

It requires that both learner and teacher must recognize the means of media utilization in the field of developing skill and activity in the study subject.

C-Management of virtual reality program:

The management field is considered of the most important fields that should be focused on in the field of evaluation of virtual reality technique programs and it includes the next enhancements:

- 1- Determine methods of recording programs files as the program must give an accurate record for methods of students dealing with the program and means of recognition of basics of rationing students responds and how they signify the performance progress.
- 2- Consider type of media that allow the system to realize an archive system that helps to achieve effective and special information on retrieval.
- 3- The program includes evaluating and personalizing selection methods which can be done through following a methodological policy that provide the user or the benefiter with methodological methods and means that help in realizing diagnostic remedial for skills and activities.
- 4- Through the program application a follow up plan is produced for students' progress and that can be achieved by making flow charts.
- 5- The program gives statistical data about students' progress, such data contribute in providing basics to establish on line data base.
- 6- The program allows display and print data of the program and students, that way allows to give a clear idea of the program and identification of means and basics of its evaluation.

D-Use of virtual reality program:

Virtual reality technique programs focus on the use as it represents the actual application of programs and it includes the field of using the coming vocabularies:

- 1- Define instructional materials: in an effective and influencing way and provide evidence for the work of subjects that clarify methods of their use and practical application.
- 2- Define methods of use in a scientific standardized way: that provide for benefiter and user potential to help applying the used system in ease.
- 3- Define procedure of use clearly: that process provides both teacher and student with possibility for practical application for skills and activities that are being handled in the program.
- 4- Define a mechanization method for the actual use: it requires the necessity of presence of some assisting devices and techniques and both student and teacher should study means of their use practically which lead to saving time and effort and better communication.

Fifth: obstacles against application of the use of virtual reality technique in textile:

Besides that, there are multiple obstacles standing in the way of successful normalization and effective use for virtual reality technique the various fields of its use. (Kling, 1980: 33) If we take into consideration the education field in textile as an example, we can classify those obstacles into 3 main divisions which are: economic and financial, technical and social obstacles.

Economic obstacles are represented in large financial commitments that should be customized not just for primary investment but also for maintenance, activation and follow up as virtual reality technique develops in a magnificent speed which push progressed devices into the

education system during short periods that convert the bought devices into technically consumed ones. In addition, that investment doesn't stop at buying devices and software and their maintenance but it also includes what follows that investment from training of employee that will activate them such as teachers and preparing the appropriate laboratories for them. (Lucian, 2008: 93)

As for technical artistic sector we can point at lack of used educational programs in this field in Arabic language and technical difficulties facing teachers while training on the available software, this is only a few amounts of technical problems that Arab researchers and educators try to concur and reduce their effect in this field.

While the third group of obstacles that was called social obstacles are the most dangerous and most influential on the possibility of success and application of VR technique for being invisible for many people. (Kling, 1980: 23; Lucas,1975: 11) Which is a name containing both social and cultural content of the technique. Many wrong beliefs, feelings and common opinion directions for some sectors of society towards virtual reality technique, it was proven that many people have beliefs and opinions like that as a result of lack of nature and possibilities of virtual reality technique, some sense that this technique will deprive the society of its means of controlling its fate and eventually it will destroy humane sense and social relations. (Attewell,1983: 54) if those beliefs remained hidden without an effect on the process of absorbing virtual reality technique in art education in particular and education in general, there was never be a problem, but it was proven that influencing variables on behaviors towards virtual reality technique and opinions towards it resulting from such beliefs and feelings, as the level and quality of use of virtual reality technique is influenced by the nature of user's opinion. (Fishbein and Ajzen, 1995: 28; Lucas, 2009: 39) it is even far from that as those directions might decide starting from purchase decision or even the will to invest. (Abdul Gader, 2013: 21)

The closure:

This study has concluded a result that is summarized in the influence of using virtual reality technique in education in countries importing this technique including Egypt has two main faces which are:

The first: the use of the first part of virtual reality technique which is hardware that consists of (device, memory, screen, keyboard, etc.) doesn't affect the general characteristics of cultures and their distinguish in the education system, as those devices can be considered as culturally neutral, any society can benefit from them without being affected by the culture of the manufacturing countries.

The second: the second part of virtual reality technique which is software is a part that has cultural and civilizational effects on education system as those software was created according to educational purposes and philosophies with different characteristics than our Islamic culture and civilization. So the challenge faces Arabic education systems and foundations in particularly Egypt is finding and developing education software that match the education purposes and general cultural features of the Islamic civilization so the Arabic education systems can benefit from such important technique to develop and improve education systems in general.

This study has shown the importance of learning and training to decrease the distance among people towards virtual reality technique as they are either wrong or negative which creates a

social and psychological gap that causes people repulsion of using and absorbing virtual reality technique as it should be in the education field.

Those beliefs and feelings were trapped among theoretical frame extended from theory of social alienation which helped on revealing its various dimensions and benefit of the previous basics of such beliefs and feelings.

The researcher has found that the sample has a low level of virtual alienation which means a positive attitude towards virtual reality technique. She also concluded that despite of humility of education level and virtual computer practice before the period of the conduction of this study but students and teachers with previous practice experience expressed more positive opinions towards virtual reality technique in the education field especially textile.

It was clear that the more the teacher was satisfied about his/her personal experience with virtual reality technique the less his/her level of virtual alienation. That has driven the researcher to recommend working on enriching the experience of both students and members of teaching association with virtual reality technique and make it more fun and satisfying to get the required satisfaction, that can be achieved through multiple ways, the most important of which are: make software easy to use, adding intelligent elements so as to deal with learner in a loving way, closer to the way of experienced human trainer. May be artificial intelligence theories and expert systems technique have the acquired solution. Working on making that software connected to culture and origins of students and teachers decreases the distance and increase satisfaction, Arabic and Islamic software are more coherent to the psychology of teacher and his/her tendencies.

Also from the results of this study that virtual alienation is linked to not willing to listen to data or news concerning virtual reality technique which limit educators' capabilities to change level of virtual alienation, it is known that changing opinion attitude is possible by sending information packs targeting that. (Hunter et al., 1984) If students and teachers with alienation avoid that information, the responsibility thrown on educators increases and becomes more challenging. May be study the main dimensions forming the virtual alienation. (Dimensions) identified by (Seeman, 2011) and were developed by (Minch & Ray, 2016) and (Abdul-Gader, 2018). May be there is something in that points towards the nature of reasons and dimensions of alienation at students and teachers so it can be focused on. For example, if the reason for someone's alienation is the feel of being Powerlessness when using virtual reality technique in art education field, an advertising packs that show the human power over virtual reality technique and confirm that it is just a tool that its services are being formed according to human needs.

It is obvious that thinkers and decision makers have reached the conviction that justifies that exertion whether on investment sector in virtual reality technique and spread them in universities or on the sector of search fund in that field. In addition to the aspired positive education returns, there are long term strategic and economic turns that can be sensed in the education field, one of researcher (Trucker, 1987) confirms that the competitive race among people of the world for obsession of larger sector in the global market in the education system in the fields of virtual reality technique in education, necessities proceeding in some kind of change in the level and direction of education wheel instead of universities missions are limited to creating producing industrial generations, their targets must be developed so it work on planting

the desire in increasing true values for what is being produced, and capability to realize that desire by developing Creativity inside students and teachers. (Byrne, 1992: 63)

Is the time has come to reconsider what we plan to change and renovate in the education system based on updates of virtual reality means in education in general and in the field of art education in particular? To get a satisfying answer for: why we change? How? For whom? If we are as teachers and lecturers are the sons of this age, is it enough to feel belonging to it without using its resources to provide path in planning for change or renovation in education system with what suit the greatness of the role of education. At the same time, we are debating about meanings of change and renovation in education system and its means, we find in front of us models for educational foundations starting to pick the fruits of change in their education system based on use of virtual reality technique and its employment in more performance deepening.

Results and recommendations:

First: results:

The researcher has concluded the coming results:

- 1- Modern artistic trends are considered a resource for researchers, expert and practitioners to enrich their artistic thoughts and innovations in all artistic fields especially the field of textile, virtual reality technique is considered an innovative entrance in that field.
- 2- virtual reality technique is resulting from sum of internal and external forces for the witness, as characteristics of visual form or quality of the eye and mental state, these forces are colliding together so realization is becoming different from the true reality.
- 3- Through the data of virtual reality technique, many variable, experimental entrances for textile can be found which contributes in developing creative capabilities of students when designing or executing textile works.
- 4- Textile has added aesthetical vision and new dimensions for virtual reality technique after performing it especially with the use of programs that led to creating light reflections and shades that appear and vanish with the movement of the artistic work or the viewer.
- 5- The researcher has used simple textile through the program that has clear influences of virtual reality technique that must have suited the artistic works with new visions that match cultures of modern age. She also has done operations that enrich design aesthetics which are linked to material and diversity of artistic vision which are represented in line, rhythm, movement, depth and spaces and what they realize of mechanical rhythms.
- 6- The researcher has realized the influences resulting from merging the technique with education in his own works using textile depend on various programs, which appears as creative and innovative style that belongs to fluency of artistic and plastic expression in virtual reality.

Second: recommendations:

This study has concluded some recommendations; the most important ones are:

- 1- Researchers should handle virtual reality technique with more search and study in the field of textile for being considered as source of artistic creativity.
- 2- There should be a center for handmade textile provided with variable artistic works in the scientific section and provided with modern computers to train students as being the most modern used methods in design in the present time.

- 3- There has to be a communication between department of art education in the faculty with the work market through holding up exhibitions whether for members of teaching association works or students, so the faculty will have the privilege of introducing modern designs for factories instead of importing them from outside and discard the capabilities of the Egyptian weaver.
- 4- Necessity for search and experiment with various materials to monitor their plastic potentials and try to invest them with what suit their nature and virtual reality technique.
- 5- Performing analytical studies containing modern artistic trends that are counting on virtual reality technique with its various methods and trial to obey its data to enrich the education aspect in the faculty and find a variable experimental entrances.

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