

Effectiveness of Science, Technology, Society, and religion (STSR) on Achievement  
of Curricula Course and Development of the Inclinations towards Study for students  
at Najran University in KSA

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# Effectiveness of the Science, Technology, Society, and Religion, (STSR) on Achievement of Curricula Course and Development of the Inclinations towards Study for Students at Najran University in KSA

## **Abstract**

The study conducted at Najran University located in Najran city in Saudi Arabia. It aimed for examination the effectiveness of the STSR approach on achievement the course of curriculum foundations and development of the inclinations towards study for students at Najran University. Both questions and hypotheses were formulated in light of the aims and principles of the study. Materials included an achievement test and inclinations towards study exam. The findings of the study revealed that there are significance statistically differences between pre and post-tests of the total achievement test of the experimental group in favor of the post- test, and significance statistically differences between pre and post-tests of the total inclinations towards study exam of the experimental group in favor of the post exam.

**Key words:** Science, Technology, Society and Religion, STSR, foundations of curriculum course, achievement and inclinations towards study.

## **Introduction**

Education has a central role towards humanity development. While it aims to build the capacity of people to be socialized and valued persons, it also develops societies to take advantage in the society of knowledge in the 21st Century. For this reason, the significant purposes of the international educational programs aim at effective learning strategies and curricula covering the contemporary needed issues like modern culture, advanced technology, civil society, and peace building. (Fourth International Conference of e-Learning and Distance Education, KSA, 2015; 2<sup>nd</sup> International Conference on Education, Culture and Identity. Europe, Bosnia; 2015; 2<sup>nd</sup> International Conference on Education, Beijing, China, 2015; and the International Conference on Education and e-learning, Cairo, Egypt, 2015, United Nations, 2003). Therefore, those issues would be putting on the highest among the educational objectives for getting new learning outcomes, along with considering the educational institutes that the main responsible bodies for providing learners with the culture and experiences necessary for better life for the third millennium.

Najran University located in Najran city in Saudi Arabia. Both of university and city have the same targets toward solving the domestic problems, and keeping pace with the international challenges. The university works to develop a scientific base agreeing with the original culture of students and people. So it needs to adopt an educational approach would be able to collect between modern culture and society traditions at the same learning environment, considering science, technology, society, and religious concepts.

In this regard, Science, Technology, and Society (STS) approach is a learning treatment, it would be the suggested learning method to help students in attaining integrative knowledge and the society culture needed. The characteristics of that approach allow to study by collecting STS Fields in the same environment simultaneously (Nuray Yörük, Inci Morgil, and Nilgün Seçken, 2010, 1417-1424; Nasser Mansour, 2009, 287-297).

This study involves teaching a course of curriculum foundations by using the Science, Technology, Society and Religion (STSR) approach for students at Najran University, and examination of its possible effectiveness on students' achievement and development of their inclinations towards study.

Educationally, one of the most famous approaches in science education is (STS) approach, which originates from the (STS) movement in science education that emphasizes teaching of science and technology to be incorporated into cultural, economic, and social contexts. (Katarin A. Macleod, 2013, 1-12; Pradeep M. Dass, 2005, 95-108). The approach encourages students to engage in issues that impact of science on everyday life, and to make responsible decisions about how to address such issues scientifically. In addition, keep students simultaneously in touch with science and technology progressing in the world.

So, Nuray Yörük, and others (2010, 1417-1424) confirmed that STSE stems enables connection between the student and the real world which should be established educationally in order to lead them to recognize possible problems that they have. This practically keeps up with the new trends of educational objectives and would to enrich both of achievement and inclinations for learners in general.

At the same time, STS approach would be the suitable method for learning in case of Najran university students inside Najran city, due to they live at the same environment, have the population features, face the same problems, and need to the technology itself. In addition, they believe in the same Islamic religion. So, using this approach in learning and teaching would include open opportunities in front of students for studying each field of science, technology, society, and religion deeply and inside the integrative framework.

In close relation with the effectiveness of the STS, some studies have concluded that although STSE has recently received attention in educational research, fewer strides have been made using its elements in moving from theory into practice of the approach. (Katarin A. MacLeod, 2012, 1-5; Nasser Mansour, 2009, 287-297; Erminia G. Pedretti, Larry Bencze, Jim Hewitt, Lisa Romkey, and Ashifa Jivraj, 2006). Which means that STS requires more studies and researches that put its main fields into real practice with new variables and learning environments, that exactly has been tested in the present study, that examines the effectiveness of the STSR approach on achievement of the course of curriculum foundations and development of the inclinations towards study for Najran university students.

### **Problem and hypothesis**

The main question of the study was “What is the effectiveness of the STSR approach on achievement the course of curriculum foundations and development of the inclinations towards study for students at Najran University”.

This raises several sub-questions

- 1- What is the effectiveness of the STSR approach on the total achievement test for students at Najran University?
- 2- What is the effectiveness of the STSR approach on each level of the achievement test (knowledge, comprehension and application) for students at Najran University?
- 3- What is the effectiveness of the STSR approach on the total inclinations towards study exam for students at Najran University?

- 4- What is the effectiveness of the STSR approach on each domain of the inclinations towards study exam (understanding, awareness, implementing, and development) for students at Najran University?

Considering both questions and variables of the study, the following hypotheses were formulated and examined;

- 1- There would be significance statistically differences between pre and post-tests of the total achievement test of the experimental group in favor of the post- test,
- 2- There would be significance statistically differences between pre and post-tests in each level of achievement test (knowledge, comprehension, and application) of the experimental group in favor of the post- test.
- 3- There would be significance statistically differences between pre and post-tests of the total inclinations towards study exam of the experimental group in favor of the post exam.
- 4- There would be significance statistically differences between pre and post-tests in each domain of the inclinations towards study exam (understanding, awareness, implementing, and development) of the experimental group in favor of the post exam.

### **The limitations of the study**

There are three limitations of the present study:

1- Spatial limitations: the experiment took place in the College of Education at Najran University in the Saudi Arabia.

2- Historical limitations: the experiment started with the students registered in general diploma in education, at the second semester from 9<sup>th</sup> March to 11<sup>th</sup> May 2014 AD, ( from 9<sup>th</sup> the Second Rabea to 12 Ragab , 1435 Hijri). And it was continuing through the first semester of the followed year (2015-1436).

3-Research limitations: this research measured the effectiveness of the STSR approach -as an independent variable- on achievement and inclinations towards study -as two dependent variables- for students at Najran University.

## **Expressions of the study**

The expressions of the study included course of curriculum foundations, achievement test, and inclinations towards study exam, as well as, the Science, Technology, Society, and Religion, (STSR) approach, which are defined as following:

- The course of curriculum foundations:

The course of curriculum foundations is the learning material of the general diploma of education, which is prepared to help students for studying according to STSR approach.

- Achievement test: the achievement test is prepared to evaluate the students' achievement of the course of curriculum foundations included three first level of Bloom' Taxonomy (knowledge, comprehension, and implementing), and it is measured by the score of every student.

- Inclinations towards study exam: which is prepared to measure the inclinations towards study contains four domains implied (Knowledge, Awareness, Implementing, and Development), and it is measured by the score of every student.

The Science, Technology, Society, and Religion, (STSR): The National Science Teachers Association (NSTA) has been identified STS as a new trend in education and approach in learning and teaching of science in the context of human, technology and science experience. (Pradeep M. Dass, 2005, 95-108). Procedurally it could be defined, the method of learning and teaching the course of curriculum foundations collecting science, technology, society, and religion interactively.

## **Theoretical Background**

Literature reviewing pointed that STS studies have been made in different countries under various titles, for instance, the addition of environment to STS, which later becomes STSE. In Belgium; STS was enhanced with the involvement of ethics and the term became STES. In Turkey, the recent curriculum involves STSE relations as Chemistry, Technology, Society and Environment, CTSE. (Anam F. Shahid , 2014; Katarin A. Macleod, 2013, 1-12; Nuray Yörük and others , 2010, 1417-1424, Mary Ratcliffe, 2001, 83-92), which emphasizes that educators should determine the required fields from the basic approach. This particularly agrees with the idea of the present study that integrated the "religion" to STS to become STSR (Figure 1) the

entire interactive approach. That perfectly fits both of scientific and social needs of the students and society in Najran.

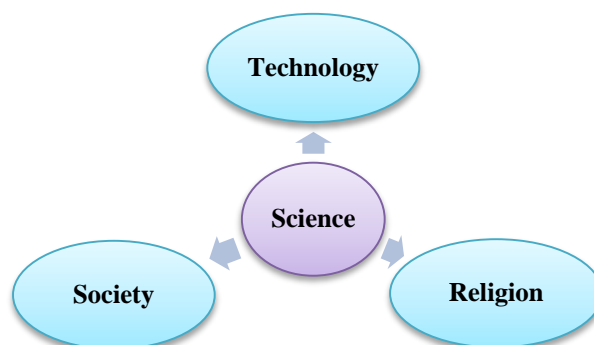


Figure 1. STSR Entire Interaction

Theoretically, the STS directly agrees with the psychology concepts that constitute the interactive relationships between learning and environment. So, psychologists addressed those significance relations associated between human activities and experience. For example, Pam Silverthorn (1999, 1-4) discussed the key concepts of behaviorists during Piaget's theory of cognitive development refers to the changes occur when responding to physical experiences within environment. Marianne Soff (2013, 47-58) pointed out that Gestalt theory in apperception includes the field of interpersonal and social situations shown in the environment, which confirms that "behavior is always a function of person and environment".

Practically, while STS approach generally used a reform of science education and curriculum development. Robert E. Yager (1992, 1-8) reported that STS approach can be used as evidence for real reform in schools' environment. Pradeep M. Dass (2005, 95-108) particularly believed that "STS develops students with modern skills allow them to become active responsible citizens by responding to issues which impact their lives". In this context, Katarin A. Macleod (2012, 1-5) recently used STSE in teaching and learning of science to be changing from traditional science orientation to STSE an orientation.

The conclusion of those ideas confirms that STSR approach could be practiced in the case of teaching the course of curriculum foundations to develop both of achievement and inclinations towards study for students at Najran University.

### **STSR interaction**

There are interactive relations between STSR fields, shown as the following:

#### **Science**

Science became a critic factor in sustainable development and passing to the prosperity. The most recent campaigns and initiatives have been developed based on science and technology like; society of knowledge and the economy of knowledge, and education for all, etc. So, some countries designed their developmental strategy according to science projects, for instance, National Science Education Standards (NSES), American Association for the Advancement of Science (AAAS), and National Science Teachers Association (NSTA) (Pradeep M. Dass, 2005, 95-108 ), In addition to that, 22<sup>nd</sup> scientific Conference for the Egyptian Council for Curriculum & Instruction, (ECCI, 2012), and the Egyptian Society for Science Education ( ESSE, 2013). All of the above confirming that science taken place in the societies' direction towards progressing.

It's worthy in this respect to incorporate science concepts into curriculum and teaching matrix in order to provide learners and society by new scientific culture helping them to make a clear understanding to their life aspects including religion. So, Alex Verschoor-Kirss (2012, 1-12) addressed the importance of understanding interplay between science, religion, and technology for safety life, and considering the fact that the majority of individuals define themselves as religious.

In this study, students at Najran University studied the course of curriculum foundations scientifically, preparing themselves to teach science in their classrooms in which they can be actively involved in making meaning of science they taught and understanding basic concepts of science, to make science relevant to their study, schools, and life. In addition, it is expecting that the course experience learned by STSR would prepare students to be scientific citizens for the twenty-first century. Science in this context is the center of the interaction between technology, society, and religion (Figure. 2)

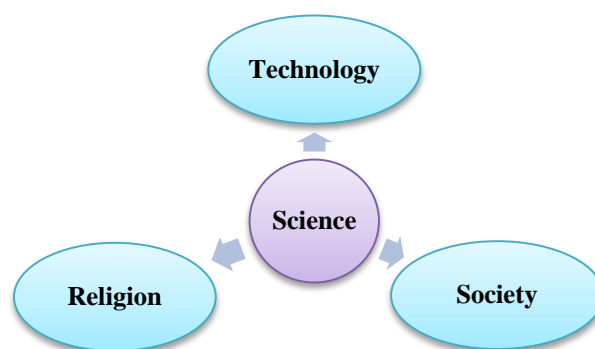


Figure 2. Science - Centered Interaction



## **Technology**

Technology has an increasing role towards society and humanity development. It highly produced information technology, biotechnology, and nanotechnology recently, etc. In addition to connecting people online all over the world. The society created technology to better life. It individually becomes dominated on all major aspects of life. Internationally, the revolution of technology in the area of nanotechnology divides the world into advanced countries and developing. (Gamal Ahmed, 2012, 55-63, Nasser Mansour, 2009, 287-297).

Regarding the vital link between individuals, society, and technology, and their effective interaction on religion, some researchers addressed this matter, for example, Alex Verschoor-Kirss and Williams College (2012, 1-12) discussed that generally technology can enhance religious practices through the expansion and creation of religious communities, and the individuals can harness online social networks in a way that upholds religious communities. Both of Franz Foltz and Frederick Foltz (2003, 321-330) analyzed a link correlates the people, society with technology, confirming that technology is the one of the central concerns of STS. On the other side, many classic STS works address the issue of society activity treating technology as simply a neutral tool without any implications other than how humans choose to use it. In this context, Gamal S. Ahmed (2013, 23-46) discussed that over the last decades, social media not only covers the daily behaviors and sharing knowledge, but also makes online communities and enriches the religion movement. Therefore, although the double role of modern technology, all of the above confirm the significant relations that link society, technology, and religion, which reinforces the humanity issues in the way of culture interaction.

Considering the relations above, there are two critical issues facing societies towards progressing, they are technology infrastructure and technology management. Both of them have an effective role in supporting communities against domestic problems, and then, moving forward to keeping pace with the global development.

In this study, students at the Najran University studied the course of curriculum foundations inside technological environment, they learned by using instructional technology, and connected with individuals and institutes.

Also, they are guided to encourage their learners to learn technologically, creating matters and assignments using e-books, online search, power point, and other tools.

Technology in this context is the center of the interaction between science, society, and religion (Figure. 3)

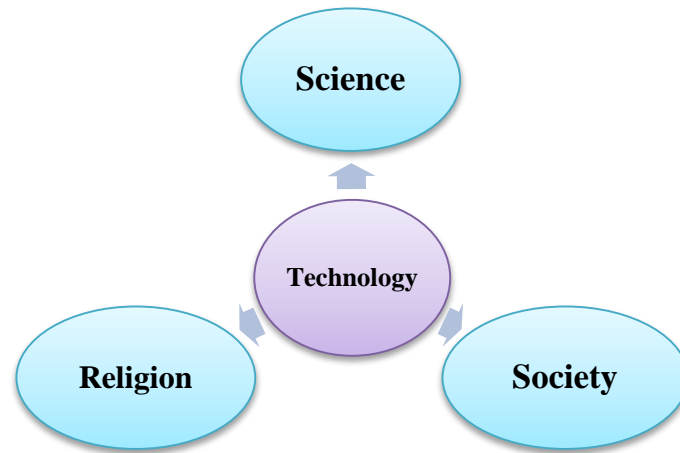


Figure 3. Technology- Centered Interaction

### **Society**

Saudi's society is a core part of the large Arab society, which has the original Arab culture and Islamic ideology. Najran region is a frame of individuals and society activities that implied culture, social, and tradition relations. The Najran society consists of many tribes, each one contains some clans and families. There are existed social ties that associate strongly between all. Both social and religious teachings made effective relations that united them. In addition to sharing in the same circumstances and ambitions launched their endeavors.

Regarding STS education and society growth, Nasser Mansour (2009, 287-297) argued the effect of science curriculum paradigm by both social and political realities in the nineteenth century. This in general confirms the importance of using STSR education in reinforcing learning and society ties in present time, and simultaneously open opportunities to build authentic interaction concepts and activities that support Najran' society.

Nasser Mansour discussed using STS approach revamped new forms of societies, so many new communities have been created, for example, the Society for Social Responsibility in Science (SSRS), the Scientists and Engineers for Social and Political Action (SESPA), the British Society for Social Responsibility in Science (BSSRS), United Scientists for Environmental Responsibility and Protection (USERP), and the Society for Social Responsibility in Engineering (SSRE). These ideas already certain the effective interaction role of society in the STS education environment, at the same

time encourage educators and individuals to introduce new society bodies inside STS paradigm, and put it into practice in order to reform and develop more society issues.

In this study, students at the Najran University studied the course of curriculum foundations interactively. So they were able to build completely understanding for STSR. They educationally apply their experience with learners inside schools, creating learning materials and activities to encourage them to study socially, technologically, and with religion values. They also prepared cultural and technological activities by sharing some tribes and individuals for searching some issues and problems. Society in this context is the center of the interaction between science, technology, and religion (Figure. 4).

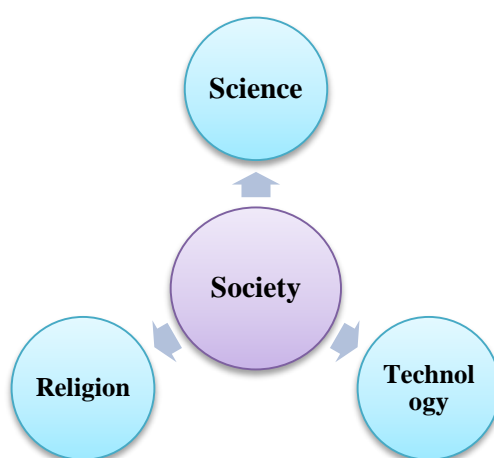


Figure 4. Society- Centered Interaction

### **Religion**

Religion can be explained as a divine guidance for mankind to live a better life and ensure happiness hereafter, it is an entire law that complete legislation to organize all the life features by justice and truth. Ignoring atheism and disbelief in God (Allah) is due to their insignificance. On the contrary, trending towards belief in Allah stems from human instinct that facilitates guidance to the Allah straight path. It is Allah guidance that was evident in era Moses, Jesus and Prophet Muhammad (Peace be upon them)

This gradual revelation completely agrees with the logic, in order to help mankind to know about their Creator step by step. So Jewish started to invite humanity to repentance, Christianity continued to call people to the mercy, and Islam leded mankind towards the Uniqueness and Oneness of God in His Names and Attributes (Peta Seda, 2007, 9-15).

In importance of relating between religion and current technology, Franz Foltz and Frederick Foltz (2003, 321-330) discussed the correlation between internet technology and religion believed assuring that technology is “a gift given by God” so that the church can more efficiently". Although technology can empower many fields other than religion, it is inevitable to decide that technology is a superpower behind all society advanced aspects.

Confirming the role of the religion as an emotional factor on behavior’s motivation enriching the interaction between science and technology, Bernadete I. Delrosarion (2009, 269-283) addressed that recently there are three elements that directly affect most of the individuals and societies, and totally rule their attitudes towards society progressing, they are culture, political, and religious. In this regard, the differences of positive behaviors of religious individuals in the Islamic world is worthy to be comparatively discussed with the behaviors of western followers of the teachings of the church (Special Euro barometer, 2005, 23).

In this study, students at Najran University believed that the Islamic teachings are the prime mover of their behaviors, motivating them to do positively with their learners and towards society development. Religion in this context is the center of the interaction between science, society, and technology (Figure. 5).

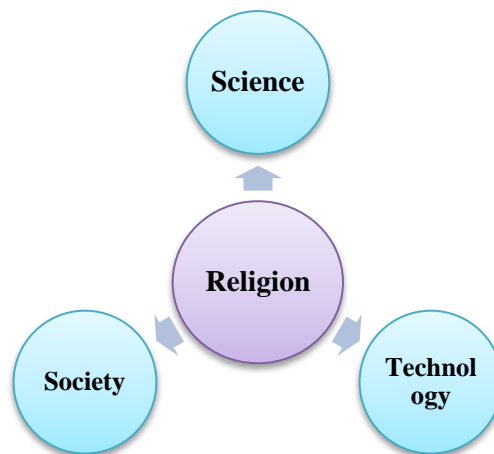


Figure 5. Religion - Centered Interaction

### **Achievement and Inclinations towards Study**

One of the important objectives of educational levels is cognition achievement, which confirms the attainment, understanding, and application of knowledge. It is the main variable of the research' findings to examine learning and continuous behaviors' development (Andrew T. McCarthy, 2012, 31-41- Alex Verschoor-Kirss, 2012, 1-12).

As Bernadete I. Delrosarion (2009, 269-283) indicated that the STS approach was found to be an effective learning strategy in improving the academic performance. So, studying by STSR would collect students to work in cooperative groups bringing their information and experience into classroom interactively and getting a high level of achievement to the course of curriculum foundations. So it's worthy to correlate between studying by using STSR and getting a high level of achievement in the present study.

Inclinations are included in Bloom's Taxonomy of educational objectives within psychomotor domains (Geoff Isaacs, 1996, 2-5). Inclination toward learning is usually formed into psychological domain of learners, which contains interests, attitudes, and values. It simply means that changing in motivation towards the aimed attitude. Therefore, there is strong relation existed between motivation and inclination building, which can be developed by studying with STSR in order to open opportunities for students to interact with the learning environment.

In this regard, Jared Keengwe & Gary Schnellert (2012, 28-35) discussed inclinations development by using various learning activities inside virtual classrooms to enhance effective interactions in collaborative learning environments. Hend Abde-Aziz (2006, 28-41) discovered the relation between inclination towards school and using modern application in teaching elementary school pupils. Also, Sonal Chawla & Anjali Jindia (2011, 65-69) developed the students' inclination towards e-learning through studying the engineering course. All of the ideas above confirm the importance of learning activities to inclination development, at the same time, open the opportunities in front of educators to work educationally on inclinations development using effective learning environments.

As for the close relation between learning and inclinations development, Pradeep M. Dass & Robert E. Yager (2009, 99-111) argued that engaging teachers in the STS approach in teaching and learning of science offers opportunities growth in several domains, (e.g. attitudes toward teaching).

In the present study, using STSR would encourage students to learn mentally and psychologically in dynamic learning environment inside and outside the university, which practically helps them in development achievement in the course of curriculum foundations and students' inclinations towards the study.

## **Procedures of the study**

In accordance with both questions and hypotheses of the study, the procedures included three phases, namely pre-implementing, implementing, and post implementing, as the following:

### **1. Pre-implementing phase**

The following procedures are included into the pre-implementing phase:-

- a- Preparing the course of curriculum foundations, which is formed based on STSR approach to be a teaching material for students.
- b- Building the achievement test, which consists of 40 multiple choice questions for evaluating the students' information. It is controlled by the first three levels of Bloom's taxonomy included (knowledge, comprehension, and application). The test was validated and tested for reliability to be ready for pre and post applications.
- c- Building the inclinations towards the study exam, in order to measure the students' inclinations towards study situations. The exam implied four dimensions included (knowledge, awareness, implementing and development), which will help students to complete a Likert-scale survey. The exam was validated and tested for reliability to be ready for pre and post- applications.
- d- Selection a sample of the study that is consisted of 46 students who already registered in the general diploma in education, during the first semester of the year of 1436 (Hijri) 2015 (AD), in the faculty of education at Najran University. They were chosen randomly to have the same socio-cultural and economic backgrounds. The sample is considered as one experimental group for research.
- e- Preparing the experimental design based on one experimental group included one independent variable which is the STSR approach and two dependent variables these are the achievement test and inclinations exam. Table (1) illustrates the experimental design of the study.

Research group	Pre-application	Teaching	Post-application
One experimental group	Achievement test. Inclinations towards Study exam.	Studying the course by STSR approach	Achievement test. Inclinations towards Study exam.

Table (1) the experimental design

## 2. Implementing phase (Experimenting)

The implementing phase included pre-application to the achievement test and the inclinations exam, teaching the course of curriculum foundations, and post-application of both the test and the exam.

### Experimental observations

Some of experimental observations have been gathered during teaching the course of curriculum foundations to the experimental group students as the following;

- They attended all lectures, exams, and a majority of them achieved homework and fulfilled some extra curricula activities. In addition, they creatively interacted with their colleagues and learning resources during the study
- They have been encouraged to study the course of curriculum foundations by using STSR, doing its requirements effectively
- They have emerged most enthusiasm for applying STSR approach inside and outside the university, for example, they created new scientific and social relations with some society institutes and schools confirming the STSR concepts
- They established a science club inside their society to be the center for STSR activities. They created resources and activities for learners and visitors of the club.

### 3. Post-implementing phase

Post-implementing phase included post- application of achievement test and inclinations exam, collecting data, and using the statistical treatments by SPSS software.

#### Findings of the study

The hypotheses of the study were examined as the following:-

##### The result of the first hypotheses

In order to examine the first hypotheses of the study titled "there would be significance statistically differences between pre and post-tests of the total achievement test of the experimental group in favor of the post- test", the Paired Samples Statistics was conducted.

Table (2) indicates that there are significance statistically differences at (0.01) level in students' scores of the experimental group between pre and post applications of the total achievement test in favor of the post application.

Table (2) the Mean, Std. deviation, T-test, and P-value of the Pre and Post Application of the total Achievement test.

Variables	Mean	N	Std. Deviation	T-test	Sig.
Total achievement pre-application.	16.3226	31	5.73520	-7.657	.000 (*)
Total achievement Post-application.	28.9355	31	5.90444		

(\*) Significance statistical differences at (0.01) level.

The results of applying Paired Samples Statistics revealed that (Pre. application: M= (16.3226) SD = (5.73520), Post application: M= (28.9355) SD= (5.90444). With T-test= (-7.657), and P= (.000). These figures confirm the correctness of the first hypothesis of the study in general, and this is essentially due to the practical use of STSR method in learning and teaching of the course of curriculum foundations, which enables students to face real situations and first-hand experience in learning that encouraged them to complete their understanding. Students were also able to apply most of STSR concepts in the course in actual events inside their environments. So, Andrew T. McCarthy (2012, 31-41), Alex Verschoor-Kirss (2012, 1-12) and Bernadete I. Delrosarion (2009, 269-283) indicated that the STS approach is effective in attaining knowledge step by step raising the achievement entirely. Students in this respect studied the course of curriculum foundations vocationally in integrated environments that are adopted to gain information in interactive context directed them to build their new knowledge constructively.

##### The result of the second hypotheses

In order to examine the second hypotheses of the study titled "there would be significance statistically differences between pre and post-tests of each level of



achievement test (knowledge, comprehension, and application) in favor of the post-test", the Paired Samples Statistics was conducted

Table (3) indicates that there are significance statistically differences at (0.01) level in students' scores of the experimental group between pre and post applications of each level of achievement test (knowledge, comprehension, and application) in favor of the post application.

Table (3) the Mean, Std. deviation, T-test, and P-value of the Pre and Post Application of each level of Achievement test.

<b>Variable</b>	<b>Mean</b>	<b>N</b>	<b>Std. Deviation</b>	<b>T-test</b>	<b>Sig.</b>
Knowledge Pre.	6.6452	31	1.74257	-4.675	.000(*)
Knowledge Post	8.3548	31	.91464		
Comprehension Pre.	7.3226	31	2.94830	-8.031	.000(*)
Comprehension Post	14.8710	31	3.38371		
Application Pre.	2.2903	31	2.10069	-5.629	.000(*)
Application Post	5.7419	31	2.27988		

(\*) Significance statistical differences at (0.01) level.

The results of applying Paired Samples Statistics revealed that (knowledge Pre. application: M= (6.6453) SD = (1.73257), knowledge Post application: M= (8.3548) SD= ( . 91464). With T-test= (-4.657), and P= (.000), (Comprehension Pre. application: M= (7.3226) SD = (2.94830), Comprehension Post application: M= (14.8710) SD= (3.38371). With T-test= -8.031), and P= (.000), and (Application Pre. application: M= (2.2903) SD = (2.10069), Application Post application: M= (5.7419) SD= (2.27988). With T-test= -5.629), and P= (.000). These figures confirm the correctness of the second hypothesis of the study in general, and this is essentially due to both students activities and the nature of STSR method .As for students they were already educators and used experience in affective studying the course of curriculum foundations, practicing their theoretical background in applying new knowledge in actual situations getting new and complete information. In terms of the method which provide students with opportunities to learn integrative facts in their real fields inviting them to build main and secondary concepts.

Lynn Boettler (2012, 3-8) discussed that students in effective situations perceived level of support from the learning environment during complex interactions that can work together to fuel students' motivation and complete achievement. Therefore, using STSR method in learning and teaching of the course of curriculum foundations provides students with open situations included in social and institutional environments, which enable them to build clear understand of information, means doing such things as providing course activities and assignments that are relevant and meaningful to students' interests, giving them choices for applying their new ideas, clear expectations, rubrics, and offering active learning activities.

The result of the third hypotheses

In order to examine the third hypotheses of the study titled "there would be significance statistically differences between pre and post-tests of the total inclinations towards study exam in favor of the post exam", the Paired Samples Statistics was conducted.

Table (4) indicates that there are significance statistically differences at (0.01) level in students' scores between pre and post applications of the total inclinations towards study exam in favor of the post exam.

Table (4) the Mean, Std. deviation, T-test, and P-value of the Pre and Post Application of the total Inclinations towards Study Exam.

<b>Variable</b>	<b>Mean</b>	<b>N</b>	<b>Std. Deviation</b>	<b>T-test</b>	<b>Sig.</b>
Total Inclinations pre-application.	17.3226	31	5.59992	-8.489	<b>.000 (*)</b>
Total Inclinations Post-application.	27.5484	31	6.20666		

(\*) Significance statistical differences at (0.01) level.

The results of applying Paired Samples Statistics revealed that (Pre. application:  $M = 17.3226$   $SD = 5.59992$ ), Post application:  $M = 27.5484$   $SD = 6.20666$ ). With  $T\text{-test} = (-8.489)$ , and  $P = (.000)$ . These figures confirm the correctness of the third hypothesis of the study in general. This is essentially refers to the studying by using STSR and the nature of learning at the same area of living in Najran city, that allow students to interact with actual events enrich their interests and believes inside the same learning environment included. Studying the course of curriculum foundations functionally with STSR enabled students to consider both society and university and help them to direct their personal inclinations toward science issues, technological aspects, and society values, as well as the religion.

In close relation with this, Alex Verschoor-Kirss (2012, 1-4) pointed out that interplay between religion and technology is not always adversarial, but there are many ways in which technology actually enhances religious practices inside society. In addition, The research of Nuray Yörük and others (2010, 1418-1419) discussed that other related studies like ( Roy, R.,2000; Aikenhead, G.S. and Ryan, A.G.,1987; Solbes, J. and Vilches, A.,1997) shown that students presented more positive attitudes towards STSE and STS approaches, which were also effective in making connections and perspectives related to the course' concepts, both of the above views confirm the possibility of effectiveness of STSR on developing the students' behaviors toward science, technology, society and religion concepts.

#### The result of the fourth hypotheses

In order to examine the fourth hypotheses of the study titled "there would be significance statistically differences between pre and post- tests in each domain of the inclinations towards study exam (Understanding, Awareness, Implementing, and Development) in favor of the post exam, the Paired Samples Statistics was conducted.

Table (5) indicates that there are significance statistically differences at (0.01) level in students' scores between pre and post applications in each domain of the inclinations towards study exam (Understanding, Awareness, Implementing, and Development) in favor of the post exam.

Table (5) the Mean, Std. deviation, T-test, and P-value of the Pre and Post Application in each domain of the Inclinations towards Study Exam.

Variable	Mean	N	Std. Deviation	T-test	Sig.
Knowledge Pre.	7.4839	31	1.80501	-2.895	.007(*)
Knowledge Post	8.6129	31	1.25638		
Awareness Pre.	5.3548	31	2.34590	-5.954	.000(*)
Awareness post	7.8065	31	1.64153		
Implementing Pre.	1.5161	31	1.67075	-5.974	.000(*)
Implementing post	4.2581	31	2.36598		
Development Pre.	2.6452	31	2.10631	-10.396	.000(*)
Development Post	6.9677	31	1.90585		

(\*) Significance statistical differences at (0.01) level.

The results of applying Paired Samples Statistics revealed that Knowledge Pre. application: M= (7.4839) SD = (1.80501), Knowledge Post application: M= (8.6129) SD= (1.25638). With T-test= (-2.895), and P= (.007). Awareness Pre. application: M= (5.3548) SD = (2.34590), Awareness Post application: M= (7.8065) SD= (1.64153). With T-test= (-5.954), and P= (.000), Implementing Pre. application: M= (1.5161) SD = (1.67075), Implementing Post application: M= (4.2581) SD= (2.36598). With T-test= (-5.974), and P= (.000), and Development Pre. application: M= (2.6452) SD = (2.10631), Development Post application: M= (6.9677) SD= (1.90585). With T-test= (-10.396), and P= (.000).

These figures confirm the correctness of the fourth hypothesis of the study in general, and this is essentially due to the functional roles of the students during studying the course of curriculum foundations that enables them to be able to create effective relations between the topics they studied and the society fields included science, technology, and the values they believed including religion. Practically they became

educators in putting the theoretical concepts they achieved into practice in the life aspects, making new understanding and meaning. In this regard, Nuray Yörük and others (2010, 1427-1418) confirmed that using STS directs students to become able to analyze topics related to science and technology, and would have knowledge about certain topics related to science and technology with an increased awareness level. In addition, UNESCO (2012, 1-8) addressed for the international sustainable development purposes the importance of science and technology relations as new perspectives on knowledge societies, indicating that science, technology, and innovation creating a policy environment to enable knowledge generation and application inside societies. This in sum confirms the vital role of interactive society relations for progressing at the same time the importance of using integrative methods in enhancing affective building of learners.

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## **International Conferences**

- Fourth International Conference e-Learning and Distance Education, Innovation Learning-Promising Future, Riyadh, Saudi Arabia, 2-5 March, 2015.

-2<sup>nd</sup> International Conference on Education, Culture and Identity, ICECI, New Trends and Challenges in Today's Europe, Sarajevo, Bosnia, 15-16 Oct., 2015

- 22<sup>nd</sup> Scientific Conference for the Egyptian Council for Curriculum & Instruction, ECCI , Curriculum in the Society of Knowledge, Suze-Channel University, Sep, 2012.

- The International Conference on Education and e-learning, ICEEL. Egyptian Society for Science Education, Cairo, Egypt, 30<sup>th</sup> Dec., 2015

2<sup>nd</sup> International Conference on Education, ICEDU, Beijing, China, 9-10 Apr., 2015.