

Full Length Research Paper

The effects of the first part of the CoRT program for teaching thinking (BREADTH) on the development of communication skills among a sample of students from Al al-Bayt University in Jordan

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This study aimed to investigate the effects of the first part of the CoRT program for teaching thinking (BREADTH) on the development of communication skills among a sample of students from Al al-Bayt University in Jordan. The study sample consisted of all the students enrolled in the training session for the first part of the CoRT program held by the Excellence and Innovation Center at Al al-Bayt University during the second semester of 2014/2015 academic year. It included 36 participants (20 females and 16 males) from different specializations and academic levels at the university. The researcher prepared a training program and a scale for communication skills, for which he extracted validity and reliability. Diagrams for arithmetic averages, standard deviations, T-test and Wilcoxon W test were used to answer the questions of the study. The results showed that there were statistically significant differences ($\alpha=0.05$) between the pre and post measurements for members of the experimental group on the communication skills scale in favor of the post measurement. This indicates the effectiveness of the first part of the CoRT program (BREADTH) on the development of communication skills as well as the lack of statistically significant differences based on sex in the post measurement. The study recommended the need to implement the training program for more than one person including all the university students to develop their effective communication skills.

Key words: The first part of the CoRT program (BREADTH), communication skills, university students.

INTRODUCTION

CoRT is one of the programs implemented in many countries for teaching thinking by De Bono. It was derived from the Institution of Publishing and Developing Cognitive Research Trust. De Bono (1989) in his program,

started from the basis stating that thinking can be taught on the grounds that thinking simplifies things and attitudes, and we must look at it as a simple process. De Bono also referred to lateral thinking, which means

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hyperlink thinking, in which an individual looks at problems from different angles instead of only one method and then moves to other views (De Bono, 1989, 18). Straight thinking is a pattern of traditional thinking that depends on an individual to move forward through successive, logical steps that must be justified in order to get a certain result (de Bono, 1997). However, the CoRT program focuses on a special concept for thinking and perception, and the relationship between them. Thinking means dealing with a conscious awareness, which in turn means dealing with thinking patterns. In dealing with thinking patterns, their tools should be used. Looking in a certain direction does not generate ideas or address issue; it is simply putting a part of experience in an individual's thinking which could have been ignored (De Bono, 1989, 150). De Bono compares the learning of thinking skills to ride a bike or swimming. At the beginning of learning them, the learner feels confused since he thinks learning them is difficult, unnecessary and unnatural; however, after learning them and obtaining a certain degree of skill, talking about the existence of confusion would be absolutely illogical (De Bono, 1989, 61). De Bono (1989) believes that practice or training leads to mastery or perfection in the development of thinking skills. Practice here means training according to the training programs in the field. Learning the thinking skills is conducted through work and practice. The CoRT program seeks to develop the thinking skills in their different types; when the thinking skills of individuals develop, their different life patterns develop through social interaction and communication, technological development, and co-existence in peace and love. Through this study, the researcher seeks to explore the indirect relationship by training the university students on the first part of the CoRT program to develop their thinking skills and the effect of that on the development of communication skills among them. Communication has been important since the ancient times because it emerged with the beginning of life on Earth. Man is by nature a social being, who needs to communicate with other humans to cope with the forces of nature, understand the methods and ways of living. There are various methods of communication, whether by signals, drums, or icons that indicates the approach of danger, preparations of war or other means of communication (Al-Sheikh, 2011).

LITERATURE REVIEW

CoRT program and communication

The CoRT program consists of sixty lessons distributed in six parts, each of which contains ten lessons. Each part has a name signaling a purpose that should be achieved when ending this part; each part of the 6 parts handles

one aspect of thinking (De Bono, 1998). They are described briefly as follows:

CoRT (1) breadth

This part is to broaden the circle of understanding students; it is essential that it must be studied before any other parts. De Bono looks at this part as the fundamental basis for future lessons, because it provides a skill upon which units stand. And at this level, the following issues are taught: handling ideas, considering all factors; laws, logical and subsequent results; goals, planning; the first important priorities, alternatives and possibilities; decisions, the views of others.

CoRT (2) organization

This part helps students organize their thoughts since the first five lessons help students to identify the problem landmarks, and the last five help them to learn how to develop strategies for solutions. At this level, the issues based on the following words were used: learn, analyze, compare, select, find other ways, start, organize, combine, focus, conclude.

CoRT (3) interaction

This part is concerned with developing the process of discussion and negotiation among students, so that students can assess and control their knowledge. At this level, the following issues are studied: Checking the parties, evidence and types of evidence, evidence values, difference, agreement and lack of relationship, being right or wrong, the final outcome.

CoRT (4) creativity

In this part, creativity is handled as a natural part of the process of thinking; thus it can be taught to students. Its primary goal is to train students to escape from limiting ideas, and producing new ideas. At this level, the following issues are studied: creative yes and no, stone rolling, random inputs, opposing the idea, the main idea, the definition of the problem, removing dangers, connectivity, requirements, evaluation.

CoRT (5) information

In this part, students learn how to collect and provide information effectively, as they learn how to recognize the ways that make their feelings and values significant to the building of the information operations. At this level, the following study issues are studied: information, questions,

keys to the solution, contradictions, expectation, the belief, the views and ready alternatives, emotions, values, simplification and clarification.

CoRT (6) action

The first five units of the CoRT program are concerned with private aspects of thinking, while CoRT6 is completely different, as it is interested in the process of thinking as a whole starting from choosing the goal and ending with the formation of the plan to implement the solution. At this level, the following issues are studied based on the following words: goal, broadening, briefing, all previous operations, the goal, the introduction, solutions, selection, the process, all previous operations.

Communication is defined as a continuous process in which there is exchange of experiences, directions, and information between two or more parties through verbal or non-verbal messages leading to an interaction and understanding relationship where effect is done on the patterns of behavior or performance for the purpose of achieving a particular goal (AlDaw's, 2009: 18). Ali (2009: 16) defined communication as the process of interaction between an individual or group of individuals or between an individual with another individual or with another group of individuals in order to participate in an experience that modifies the behavior of these individuals.

Communication becomes successful when the sender in the communication process "creates a message ... and the recipient of this message hears or sees it (via body language) from his personal perspective ... In successful connections, the recipient of the message provides his reaction and thought about the message" (Allis, 2008). The goal of effective communication is the recipient's understanding of the message and interpreting it in the method intended by the sender; the process of communicating effectively is the responsibility of both the sender and the recipient although the emphasis is generally on the clarity of the message. Communication is a process of two dimensions; there is no communication from one party (only the sender); the sender should be clear for the future or for recipients. The recipient is not a recipient of messages only that he should listen to the sender bearing in mind his ability to effectively communicate with him. Also, effective communication depends on the exact transmitting and receiving of nonverbal messages or messages mixed with verbal messages. In communication, the relationship is reciprocal between the two parties, or in other words, it refers to self-opening to others in a vivid relationship that does not break even back again (Abu Numra, 2001).

Previous studies

Khatab (2004) conducted a study that aimed to identify

the effect of the first level of CoRT program (broadening thinking) and the second level (organization) on the development of the skills and abilities of creative thinking and self-concept among students with learning difficulties in fourth, fifth and sixth primary grades. The researcher applied the program on one of the two groups in an entire semester, using the Torrance test of creative thinking. The results confirmed the presence of statistically significant differences between the two groups (experimental group) in the development of skills and abilities of creative thinking. AlJallad (2006) conducted a study to detect the effect of using the CoRT program for teaching thinking skills on the development of creative thinking skills among students of Arabic and Islamic Studies at Ajman University Network of Science and Technology. The results confirmed there were significant differences in the overall test score and in the three creative thinking skills (intellectual versatility, automatic flexibility and originality) between the two study groups in favor of the experimental group that used the CoRT program. The study recommended the need to pay greater attention to teaching thinking in programs of preparing teachers and adding a specialized material on teaching thinking in the university study plans. Al-Muhtaseb (2010) investigated the impact of integrating thinking skills in science textbooks on achievement in science, scientific skills and decision making ability among 7th graders in Palestine. The content of the two units of seventh grade science textbook was integrated with thinking skills activities based on three parts of Cognitive Research Trust (CoRT) program: Extending the field of perception, organization and problem solving. A sample consisting of 72 female students was selected and equally distributed into two groups, one was assigned as the experimental group, and the other as the control group. The results revealed that the integration of thinking skills in science content was effective in developing 7th female students' achievement in science, scientific skills and decision-making ability. Furthermore, Al-Edwan (2011) explored the effectiveness of a training program based on CoRT strategies to develop the critical thinking of seventh grade students in history. The study sample consisted of 163 seventh male and female students in Amman Second directorate. The subjects were divided into two groups. The experimental group consisted of 80 male and female students, and the control group consisted of 83 students. The results showed that there are statistical differences in the critical thinking of seventh grade students in history which are related to teaching methodology and the method of the training program which is based on CoRT strategies.

Melhem et al. (2013) aimed to enhance the critical thinking skills among sixth grade students with learning difficulties in mathematics in Jordan by using the CoRT program. For this purpose, a critical thinking test was administered to a sample of 93 sixth grade students with

learning difficulties in mathematics from schools in the First Amman Educational Directorate in Jordan before and after a three-month training program. The participants of the sample were distributed into two groups. After that, one group was randomly chosen to be the experimental group, and the other one as the control group. The results showed that the training program had a very large-sized effect on the participants' critical thinking. Also, Kumari and Gupta (2014) was designed to experiment the effect of De Bono's CoRT Thinking Program on the Concept Map Performance of Senior Secondary School students of grade IX and X in relation to their level of intelligence. Two identical groups consisted of 51 respondents in each group, that is, the experimental group and the control group drawn with the help of multiclustered random sampling techniques and level testing. Results of the experiment were then analyzed by different statistical techniques. It was observed that CoRT Thinking Program has significant effect on concept map performance. Level of intelligence has also been found to have significant effect on some components of concept map performance.

Furthermore, Hanan (2014) identified the effect of utilizing CoRT program on developing creative thinking skills in mathematics for 6th grade students. The study sample consisted of two classrooms of 6th grade students with a total number of 70 students divided equally into two group, experimental and control from Abu Tamam High Basic School for females. There were statistically significant differences ($0.01 = \alpha$) in the average marks of both experimental and control groups in the post-test of creative thinking skills in favor of the experimental group. And there were statistically significant differences ($0.01 = \alpha$) in the average marks of the experimental group in the post-test of creative thinking skills in the pre and post-tests in favor of the post-test.

Comment on previous studies

From the previous studies that focused on the CoRT program, it is noticed that they aimed to hold training programs for the development of the skills of thinking, critics and the academic achievement in a direct way. This is consistent with the previous studies on the effectiveness of the CoRT program especially on the development of the different skills of thinking. However, this is inconsistent with studying its effectiveness in developing skills other than the thinking skills in an indirect way such as communication skills.

STUDY PROBLEM AND QUESTIONS

In this growing world of the control of communications and information technologies and complexity of problems

in various aspects of life, everyone faces the challenges of tomorrow's world in terms of what they should learn and what they should avoid to be able to coexist and communicate successfully with each other. Accordingly, many communities added many concrete radical changes in their educational policies and the methods of education to keep pace with this progress and build generation that is capable of correcting thinking, understanding and application, which avoids many of the problems. The programs of thinking education are effective in developing the thinking of students in various stages of education, such as creative thinking (AlJallad, 2006; Shabib, 2001; Ritchie, 1999), the ability to solve problems (Abdallah, 2005), critical thinking (Abuha, 2000; Alswaiti, 2001), decision-making skills (AlQura'n, 2003; Gregory Cleman, 2001), improving the psychological state of students for them to be aware of their potential and abilities to take advantage of them (AlSrir, 2005), development of the self-concept (Khetab, 2004; AlSrir, 2000) and improving their academic achievement (Abu Hajleh, 2006). Through the researcher's experience in teaching at Al al-Bayt University, the authors noticed that there is a gap in effective communication among the university students especially within lectures, as effective communication entails dealing with the message between the sender and the recipient either through understanding or analyzing all the aspects of the matter related to their experience. So, the researcher chose a new way of thinking education which is the first part of the CoRT program for teaching thinking (BREADTH) and studied its effectiveness in the development of the communication skills among a sample of students from Al al-Bayt University. Therefore, the study problem is represented in answering the following main question. "How effective is the first part of the CoRT program for teaching thinking (BREADTH) skills in the development of communication skills among a sample of Al al-Bayt University students in Jordan? From this main question, is the following sub-questions:

1. Are there statistically significant differences at $\alpha=0.05$ between the post and pre measurement degrees in the communication skills of the students of Al al-Bayt University based on the first part of the CoRT program for teaching thinking (BREADTH)?
2. Are there statistically significant differences at $\alpha=0.05$ between the post measurement degrees in the communication skills among the students of Al al-Bayt University based on the sex of the student?

Study importance

1. Providing more research and studies concerned with university students, which use programs of teaching thinking skills to overcome a lot of problems and

difficulties faced in the university environment.

2. Studying the effectiveness of the first part of the CoRT program for teaching thinking BREADTH in the development of communication skills among a sample of Al al-Bayt University students in Jordan.
3. Publishing the importance of effective communication among the university students.

Study determinants

1. Temporal determinants: This study was conducted during the second semester of the academic year 2014/2015.
2. Spatial determinants: The students enrolled in the training session of the first part of the CoRT program BREADTH, which was held by the Excellence and Innovation Center at Al al-Bayt University.
3. Study determinants related to the study tools used which is the first part of the CoRT program BREADTH and the communication skills scale.

Operational definitions

CoRT program

A program is designed to teach the thinking tools of De Bono, which consists of six parts in ten lessons. It is an abbreviation for cognitive research trust.

The first part of CoRT (breadth)

Ten consecutive sequential lessons selected from the CoRT program for teaching thinking, which includes tools, objectives, examples, exercises, discussion, and follow-up; each lesson has a plan and a worksheet for each group.

Communication skills

They represent the total score of the participants in the training program on the communication skills scale prepared by the researcher; validity and reliability were extracted in this study.

METHODOLOGY

The study sample

The study sample consisted of all the students enrolled in the training session of the first part of the CoRT program held by the excellence and innovation center at Al al-Bayt University during the second semester of the academic year 2014/2015. It included 36

participants from university students (20 female and 16 male) that represented different specializations and academic levels at the university. So can attribute the difference between the two measurements pre and post to the only training program and there is no other variables such as the characteristics (students' learning styles, learning habits, cognitive knowledge to think critically) of the participants may have affected the results of the study because the study members themselves are in the pre and post measurement also. They did not enroll in any programs during the training program. It is noted that the registration in the session was opened to all university students.

Study approach

The researcher used the pre/pseudo experimental designs in addition to the one group pre-test post-test design.

Study variable

The first part of the CoRT program (BREADTH) represents the independent variable and communication skill represents the dependent variable.

Study tools

The first part of the CoRT program (breadth)

The researcher prepared a training program consisting of ten training sessions; it is based on CoRT (1) lessons of BREADTH in an abbreviated way, as follows:

The first lesson: the Plus, Minus and Interesting (PMI), Examining all the plus, minus and interesting aspects in a situation or thought.

1. What are the good points of an idea? Why do you like it?
2. What are the bad points of an idea? Why do you not like it?
3. What do you think is interesting in it?

The second lesson: Consider all factors (CAF), examining all the possible factors associated with a situation or idea and taking them into consideration.

1. What are the possible factors that may affect you?
2. What are the possible factors that may affect others?
3. What are the possible factors that may affect the institution or society at large?

The third lesson: Rules, the use of the previous two tools to study the rules and factors and take them into account when issuing new laws.

The fourth lesson: Consequence and Sequel (C & S), finding all the possible consequences and sequels in the future when making a decision or a test.

1. What are the possible consequences and sequels directly?
2. What are the possible consequences and sequels in the short term (1- 5 years)?
3. What are the possible consequences and sequels in the medium term (2 -25 years)?
4. What are the possible consequences and sequels in the long term (+25 year)?
5. What is the impact of the possible consequences and sequels

both on you and others?

The fifth lesson: Aims, goals, objectives (AGO), identifying the short and long term aims, goals and objectives, performance goals or edited observations of a work or a decision made by the individual or others.

1. What are the goals you seek for when doing a certain job?
2. What are the sub or partial goals that lead to the achievement of the goals?
3. What are the performance outcomes that achieve the sub-goals?
4. What is the relationship between your goals and the goals of others?

The sixth lesson: Planning, planning an action plan that responds to changes and taking into account the aims, goals and sequels in addition to all the factors that go into the planning process.

1. Flexibility in the sense of viability as conditions change.
2. Evaluation stations that may entail modifying goals or a certain track.
3. Red lines summons to abandon the whole plan for its failure or change in circumstances.

The seventh lesson: First important priorities (FIP), selecting the alternatives or the possibilities and arranging them on the list of priorities according to importance.

1. The personal, institutional and social values are important factors in determining priorities.
2. People differ in the order of priorities towards any position because of their beliefs and interests.

The eighth lesson: Alternatives, possibilities, choices (APC), finding all the alternatives, possibilities and options and taking them into account in making decisions.

1. Overriding styles and mental inertia.
2. Freedom from the past.
3. Constant search for the best.

The ninth lesson: Decisions, drawing attention to the different processes involved in taking decisions by benefitting from the thinking tools presented in the previous lessons.

1. Identifying goals and objectives.
2. Generating the largest possible number of alternatives and options.
3. Sorting alternatives according to priorities.
4. Choosing the best alternative.

The tenth lesson: Other people views (OPV), drawing attention to the views of others related to the situation and overcoming the unilateral view of things and of the world.

1. Identifying the persons and the entities concerned with the situation;
2. Identifying the views of the people and the agencies related to the situation;
3. Combining between this viewpoint and the personal viewpoint and drawing lessons.

Communication skills scale

The researcher reviewed the theoretical literature on the communication skills for university students and prepared a scale

for the communication skills in its preliminary status consisting of forty items with many communication skills (clarity, realism, briefing, honesty, consistency, friendliness and the whole message) in multiple places within the university (lecture, cafeteria, library, laboratories, physical and rehabilitation lounges and university areas); the researcher, in answering each item of the scale items, adopted a tri estimation scale (always, sometimes, rarely) for the degrees (1,2,3).

The validity of the communication skills scale: To examine the validity of the communication skills scale, the researcher presented it to 10 specialized university professors, who have put their comments on each paragraph in the scale for arbitration; four fields were written next to each item (appropriate, inappropriate, clear sense and unclear sense) as it is evident in Appendix No. 3. Afterwards, certain amendments to the items were taken into consideration according to the opinion of the jury, which did not delete any items in the scale but focused their observations on correcting the language and do the reformulation to make it more understandable to the examinees. The scale, in its final image, consisted of forty items.

The reliability of the communication skills scale: To confirm the reliability of the study, the researcher used the test - retest by applying the communication skills scale and reapplying it after two weeks on a group of 30 university students not included in the study sample; the Pearson correlation coefficient was calculated between their estimates on both occasions which amounted to 0.88, and the reliability coefficient was calculated through the internal consistency method by Cronbach's alpha, which was 0.83. These values were considered appropriate for the purposes of the study.

Study procedures

1. At the beginning of the second semester of the academic year 2014-2015, consultations began between the Director of the Excellence and Innovation Center at the university and a number of specialists, including the researcher on the university students' needs of training sessions; afterwards, the training session of the first part (BREADTH) of the CoRT program was announced, where the targeted group of the training session consisted of all the students at Al al-Bayt University.
2. The researcher was commissioned by the Director of the Excellence and Innovation Center at Al al-Bayt University to hold the training session of the first part (BREADTH) of the CoRT program.
3. The registration was opened for students for two weeks from the date of the announcement of the session through the official website of the university where the number of the registered participants was 36 (20 females and 16 males) from different specializations and academic levels at the university.
4. The researcher prepared a training program in the form of sessions and workshops for four weeks (a short time span) by three hours of training every week. The reason is to control some variables that could threaten the external honesty of the search (dissemination of results) such as the students' growth variable, students' experiences, and the number of participants in the training program.
5. The researcher prepared a communication skills scale and extracted the connotations of validity and reliability.
6. The researcher conducted the pretest for the communication skills of the members of the experimental group a week before applying the experimental program.
7. The researcher implemented the training program on the targeted experimental group for a period of four weeks as planned

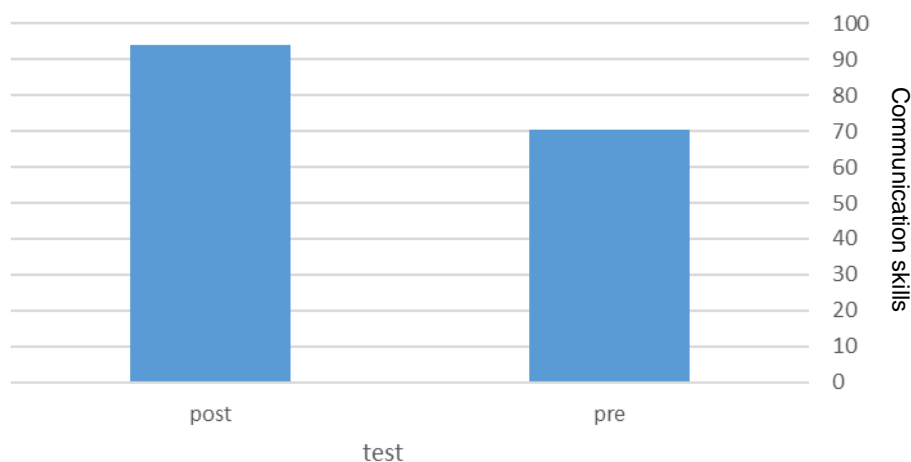


Figure 1. Arithmetic averages between the pre- and post-test for the communication skills scale.

for the training program.

8. The researcher conducted the post test for the communication skills scale for the members of the experimental group a week after applying the experimental program.

9. The arithmetic averages, standard deviations, T test and Wilcoxon W test were extracted through the SPSS to answer the questions of the study.

RESULTS

Answer to the first study question

"Are there statistically significant differences at the level of $\alpha=0.05$ between the averages of the pre and post measurement degrees in the communication skills among the students of Al al-Bayt university based on the first part of the CoRT program (BREADTH)? The arithmetic means and standard deviations of the pre and post scales for the communication skills scale were calculated for the students of Al al-Bayt University (Figure 1).

To identify the differences between the pre and post scales on the communication skills scale, (T) test was used for the single sample as it is evident in Table 1. Table 1 shows there are statistically significant differences between the pre and post scales in favor of the post scale, indicating that the first part (BREADTH) is efficient in developing the communication skills of Al al-Bayt University students.

Answer to the second study question

"Are there statistically significant differences at the level ($\alpha=0.05$) between the averages of the post scale degrees on the communication skills among Al al-Bayt University

students based on the sex of the student? The arithmetic averages between males and females in the post scale on the communication skills scale for the students of Al al-Bayt University are shown in Figure 2.

Figure 2 shows a simple difference between males and females in the communication skills on the post measurement. To find out whether these differences were statistically significant in the communication skills based on sex in the post measurement, Wilcoxon W test was used. The results are shown in Table 2. Table 2 shows no statistically significant differences between the ranks of males and females in the post measurement on the communication skills.

DISCUSSION

The researcher finds that the training sessions had a larger role in improving the communication skills of the university students (the members of the experimental sample). Such sessions were designed to help expand the understanding and perception circle through their selected examples from the life of a college student in the lecture, cafeteria, library and university areas and others. The first session tries to develop the ability of determining the pros and cons that resulted from communication at any place within the university. The second session helped the students to study and consider all factors while communicating with other students; the third session contributed and enabled students to determine and establish laws controlling the communication mechanism among themselves; the fourth session played an important role in the way of studying the results of communication among themselves and their consequences; the fifth session encouraged the students on

Table 1. The means, standard deviations and the (T) value.

Scale	Means	Standard deviation	(T) value	Statistical significance
Pre	70.53	4.878	86.742	0.000
Post	94.17	3.376		

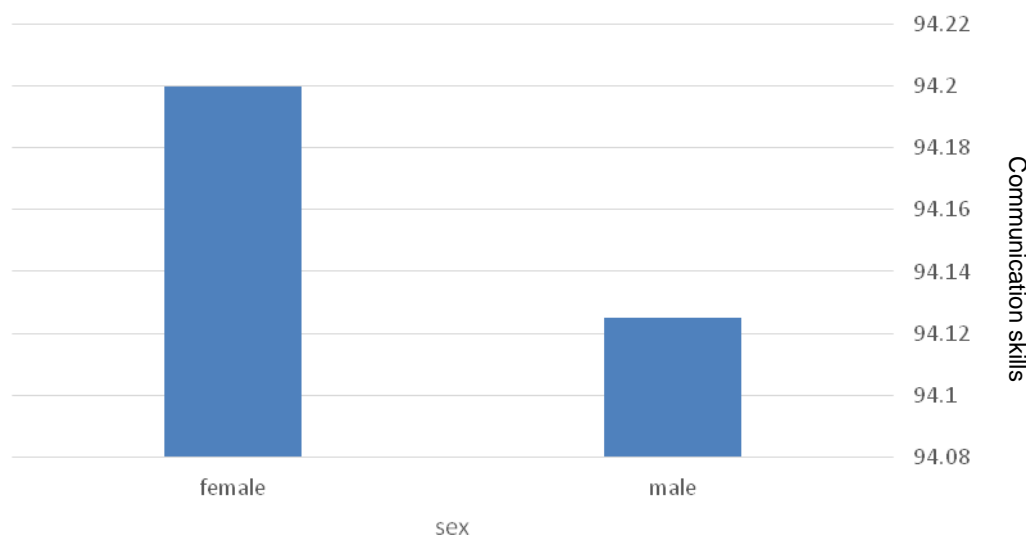


Figure 2. Arithmetic averages between males and females in the post measurement.

Table 2. Wilcoxon W test results for the differences between males and females on the communication skills in the post measurement.

Variable	Males (16)		Females (20)		W	Z	Sig.
	Average ranks	Total ranks	Average ranks	Total ranks			
Communication skills	18.41	294.5	18.58	371.58	294.5	-0.048	0.962

how to determine the long and short term goals when the student is thinking on how to communicate with other students; the sixth session urged students to have good and thorough planning before thinking on how to communicate with any student, the seventh session enabled students to identify the priorities in terms of importance during the communication process, the eighth session played an important role in helping students study all the alternatives, possibilities and options during communication, the ninth session encouraged students on how to make decisions and hold responsibility during communication if present, and the tenth session helped students study and analyze the views of others while communicating and not being limited on the individual viewpoints. The researcher explains the effectiveness of the first part of the CoRT program (BREADTH) in the development of communication skills (Figure 3).

Also, the researcher believes that the first part of the CoRT program helps develop and expand the understanding and perception of the learner; it helps him analyze and study all the situations he faces during his time at the university. This makes him to increase communication with other students because of the importance and great benefits he gets either in his study, social interaction or solving many academic and psychological problems. The previous studies of Kumari and Gupta, (2014), Melhem and Isa (2013), Al-Edwan (2011), AlJallad (2006) and Khattab (2004) confirmed the effectiveness of the CoRT program in improving the level of thinking among students which reflects positively and directly on the development of their communication skills.

With regard to the sex of the trainee being affected by the effectiveness of the program on developing the communication skills, the results showed no differences,

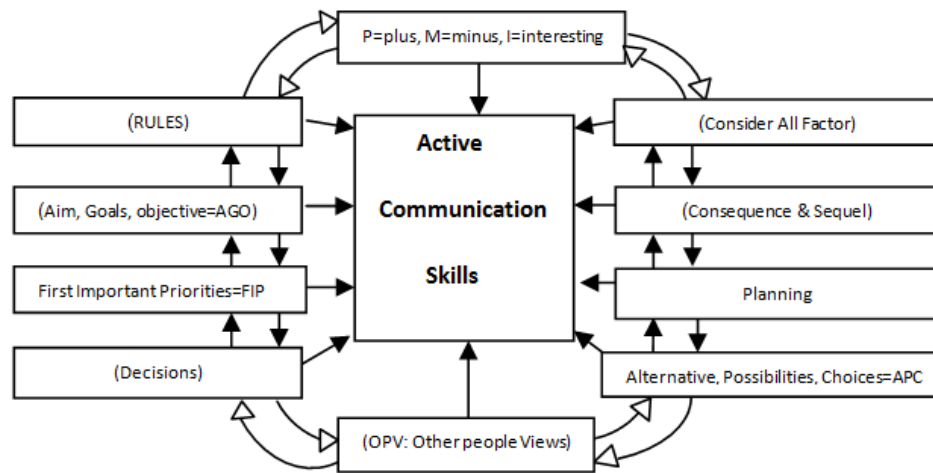


Figure 3. Relationship between first part of the CoRT program (BREADTH) and active communication skills.

indicating that the program has the same effect on the development of communication skills, whether the trainee is a male or a female. Therefore, in the light of the findings, the researcher recommends the following:

1. Holding of the first part of the training program of the CoRT program (BREADTH) and circulating it to include most of the university students.
2. Conducting a study to determine the reasons for the lack of communication among students.
3. Conducting studies to examine the effect of the training program, the first part of the program CoRT on other variables, such as motivation, self-control and self-regulation.
4. Conducting further training courses to include the other five parts of the CoRT program.

Conflict of Interests

The author has not declared any conflicts of interest.

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