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The Impact of Talents-Unlimited-Theory Based Activities on the Development of Divergent Thinking Skills and the Development of Motivation for Creativity among Primary Stage Students

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Abstract

This research aims to identify the impact of a training programme that adopts the talents unlimited model (TUM) on the development of divergent thinking skills of elementary school students in the UAE, and on enhancing their motivation for creativity by using the experimental method. The research aims to answer two main questions: that are related to the impact of the activities of the multiple talents programme on developing the creative thinking skills of sixth-grade students in the UAE and developing their motivation for creativity. The research sample consisted of 42 female and male students from Al Nouf Elementary School for Girls in Sharjah, and from Al Bidaa Elementary Education School for Boys in Fujairah, divided into experimental and control groups. To achieve the research objectives, the study designed a training programme that follows the talents, unlimited model. In addition, a motivation scale was developed consisting of 29 Likert items. The results indicated that there are statistically significant differences between the averages marks of students in the experimental and control groups in favour of the experimental one on the dimensional and total divergent thinking test (the grand total) and its five sections (title, details, originality, flexibility, fluency) and on the motivation test in its six dimensions. The results indicated that the programme managed to moderately interpret the dependent variable. Based on the results, the researcher concluded that the talents unlimited model has a significant impact on developing divergent thinking skills among the subjects in the experimental group. The students acquired the skills to develop and provide various ideas. In addition, the model enhances the students' ability to suggest creative and unconventional ideas. The talents unlimited model activities have a clear statistical significance as demonstrated by the average scores of the experimental group. Subjects in this group showed a high level of thinking skills and motivation for creativity.

1. Introduction

This Pedagogical theories are based on providing appropriate support at school to achieve a model that would enable the teacher to plan, develop, implement, and evaluate an educational programme. They seek to provide the best services and programmes that meet their needs that are the outcome of the disparity between the students and their environment, and the variations in the content and skills that they need. Meanwhile, most of our educational institution focus on the students' academic skills neglecting their other potential skills. Current educational programmes, plans, and strategies face much criticism and challenges especially for their reliance on pre-packaged curricula that undermine the goal of educating the future generations; a task that should only be entrusted to those who are most concerned with the students' particular needs and their divergent skills and abilities. As such, these programmes may negatively impact the students' critical thinking skills, research skills, and intellect hence impeding their motivation for discovery and creativity.

Training young students to utilize and develop their critical thinking and problem-solving skills is considered one of the main tenants of the comprehensive development of any nation. Awareness of the crucial role science plays should be our top priority as it would help students to be better able to understand what they are being taught and, as a result, enable the nation to fill the skill gap it suffers. When students apply their higher thinking, they are less likely to give up. This means that we must admit that class discussions would ultimately direct the teachers to adopt teaching strategies that focus on developing the students' thinking skills and cater for the needs of generation Z. Modern teaching theories aim to produce learners who think in unconventional, creative, and intuitive way and promote learning approaches that apply

investigation skills, divergent thinking, and projects. It has been observed that students who are able to overcome challenges and adapt better to challenges are those who are more likely to display talented behaviour [1]. The focus on the teaching of these "survival skills" (Wagner, 2010) is a significant requirement of this new age of innovation and technology. Abu-Rayash (2007) claims that learning theories are concerned with the student's behaviour and the positive changes that it undergoes. They aim to improve and develop the students' behaviour and strive to achieve educational goals in the shortest time and with the least effort. This supports calls to adopt a learning approach that focuses on the development of a variety of potential intuitive human resources which, in its turn, would positively impact the quality of educational programmes.

The real challenge that educational institutions face is the recruitment of qualified teachers whom they would train to practice the said thinking skills. In a typical class, some teachers may focus on helping their students develop their thinking skills. However, only those teachers who have received the appropriate training are able to would help their students to use their thinking skills at higher levels [2] enhancing their students' self-confidence and reinforcing future skills. Meanwhile, modern educational approaches consider learners not as passive consumers and receivers of knowledge but rather as produced of knowledge through learning to learn programmes where the pedagogy is based on developing and enhancing students' thinking skills [3]. Guilford (1966) proposed a broader link between divergent thinking and the students' engagement in extracurricular activities and achievements. In contrast, what we are practicing here is a manifestation of the dominance of traditional thinking over creative problem solving. While Gardner discussed multiple intelligences and teaching methods, many went further claiming that people employ different thinking methods and follow different steps in their thinking process. Taylor (1978, 1988) developed a talent model that presented a classification of the major human capabilities which aimed to bridge the gap between the school and the levels of achievement in the classrooms. However, the capabilities entailed in the thinking talents model are yet to receive enough attention after Gardiner. Unlike many of Gardiner's open educational activities, the talents unlimited model for teaching thinking skills seems to have met the needs of learners with a wide variety of skills. What makes this approach fairer is that it caters for the students' individual differences and trains all of them to develop such skills as planning, forecasting, communication, decision-making, and productive thinking and only those who are considered gifted [4].

Taylor (1978) succeeded in developing a solid model that pointed out the shortcomings of making a distinction between the gifted and other students. His was a practical framework that explained the individual differences in developing thinking skills and tools. His argument was that the more varied the cognitive skills, the more equal the students are, and the greater the chances of expanding their abilities in school performance, and the greater the growth of the whole individual. It is a dual and synchronous approach that includes the development of abilities and innate talents and the acquisition of knowledge. Schiever, (1990) believes that thinking is a process of developing concepts, deriving principles, reaching results and generalizing, while the interest in teaching thinking raised questions among teachers on both sides about how students learn best to think creatively and selectively. Teachers may also wonder about whether there are any skills training programmes in regular classes, and at when to start teaching thinking. This because we should always start with devising a plan and set clear objectives to encourage young students to engage in and apply thinking in different learning contexts [5]. It is probably the time to implement these proposals through a talents unlimited programme that is focuses on thinking skills and seeks to discover talents while improving the quality of education and enabling students to develop and enhance the skills they utilize to solve problems [6].

If we consider thinking as a problem solving skill, then the basic concepts on which to device the required curricula would become apparent and the need to train the teachers will emerge as a result. By focusing on teaching thinking, the talents unlimited model has become a significant force for change in education. Engaging young students in investigating real-life problems, which Renzulli (1977) referred to as the "starting point", has become the main target in the process of enhancing educational programmes. This supports the popular view that the talents unlimited model can play an important role in developing students' higher cognitive skills and the re-evaluation of teaching. Beyer (1984) demonstrated that the effective teaching of thinking is developmental and requires long-term practice. He advised that divergent thinking programmes should be devised and implemented in all school grades based on the talents unlimited model as it facilitates the development of the children's thinking skills and supports class discussions during which teachers will be able to easily observe students' responses and individual differences. Consequently, teachers would be able to perceive that students display different response patterns. This diversity in response patterns among students is the main key to effectively directing their interests and developing their talents [6]. In addition, teachers in regular classes can help these students to focus on their interests and advance during the problems solving process to researching real-life problems in manner that suits their interests [4] as the model can be used with students at any school stage and at any level.

Several studies reveal that the application of the talents unlimited programme had a significant impact on reducing teachers' bias towards high-achieving students. Another effect of the programme was the identification of many gifted students in less privileged areas [7]. Aljughaiman & Albuyosif (2022) explained the low representation of schools in less privileged areas in such programme as a direct result of the lower opportunities for education, lack of awareness of the existence of such opportunities, and the poor educational level of the students' families. In general, the talents unlimited programmes are characterised by dynamic interaction as it forms natural comprehensive connections that students can utilize to solve problems which makes it feasible for use in regular classes. It also enables educators to expand and invest in the capabilities of those students who require special extra services which the regular curriculum does not provide. By doing so, they can meet these students' needs and increase their motivation for creativity.

Within the scope of this theory, Taylor presents a three-faceted model for talent development based on the hypothesis that 99% of students can be identified as above average on at least one of the six talent areas. Therefore, it is essential to give these students to develop their talents through a comprehensive educational programme. When this hypothesis was tested, it was found that 85% of grades 1-6 students fell into this description [7]. Modern cognitive theories focus on thinking skills and cognitive processes. The talents unlimited theory made significant achievements in providing more details about the individual differences in the thinking process and methods of creativity including the following thinking talents:

The Talents Unlimited Model

Talent Area: Productive Thinking

Definition: To generate many, varied, and unusual ideas or solutions and to add detail to make the ideas more interesting.

Sample Activity: Students learning how energy can change from one form to another draw/label many, varied, unusual examples of energy chains.

Talent Area: Decision Making

Definition: To outline, weigh, make final judgments, and defend a decision on the many alternatives to a problem.

Sample Activity: Students decide which famous African American included in a reading unit will be the subject of dioramas they make by weighing the choices with such criteria as information available, interest to audience, and so forth.

Talent Area: Planning

Definition: To design a means for implementing an idea by describing what is to be done, identifying the resources needed, outlining a sequence of steps to take, pinpointing possible problems, and showing improvements in the plan.

Sample Activity: Following a study of myths and misconceptions about bats, first graders develop a plan for conducting a survey about other children's attitudes about bats.

Talent Area: Forecasting

Definition: To make a variety of predictions about the possible causes and/or effects of various phenomena.

Sample Activity: As students first learn about the 14th Amendment during a study of their state's history, they are asked to predict many, varied possible effects of the ratification of the amendment.

Talent Area: Communication

Definition: To use and interpret verbal communication to express ideas, feelings, and needs to others.

Sample Activity: Following a field experience to measure the circumference of trees in their schoolyard, students compose math word problems that make comparisons between the sizes of those trees and the sequoia tree they just read about.

Talent Area: Academic

Definition: To develop a base of knowledge or skill about a topic or issue through acquisition of information and concepts.

Sample Activity: Students read from a variety of sources about political candidates in a local election, making notes of the main ideas.

Figure 1: Examples of talent areas that teachers may refer to when using the talents unlimited model

Thinking talents are taught as one of the main principles of the talents unlimited model. It is based on the premise that students should effectively participate in the development of their thinking talents. One feature of this participation is gaining awareness of the nature of thinking talent development and how the model works. Furthermore, students are familiarised with the rationale and the objectives of the model to support the teaching of talent development. Therefore, students are encouraged to develop their individual talents and understand the function of each of the various thinking

talents. Chissom & McLean (1979) observed that training students to use the decision making skill, for example, involves learning how to find information, self-awareness, and developing strategies to deal with incidents of problem solving. Moreover, guiding students to employ productive thinking involves training them to develop many varied, and unconventional ideas and to contemplate how to make things more effective (Schlichter, 1981). In school curricula, Taylor (1978) found the perfect space to develop his thinking talent model as he focused on helping students recognize their individual capabilities, identify those that require development, and raise their awareness about the talents that most children possess. Unlike other theories, Taylor's basic assumption was that from a scientific perspective, no child can be the best in all skills, no student remains constantly average, and none perform the worst all the time. Each child has her strengths and weaknesses.

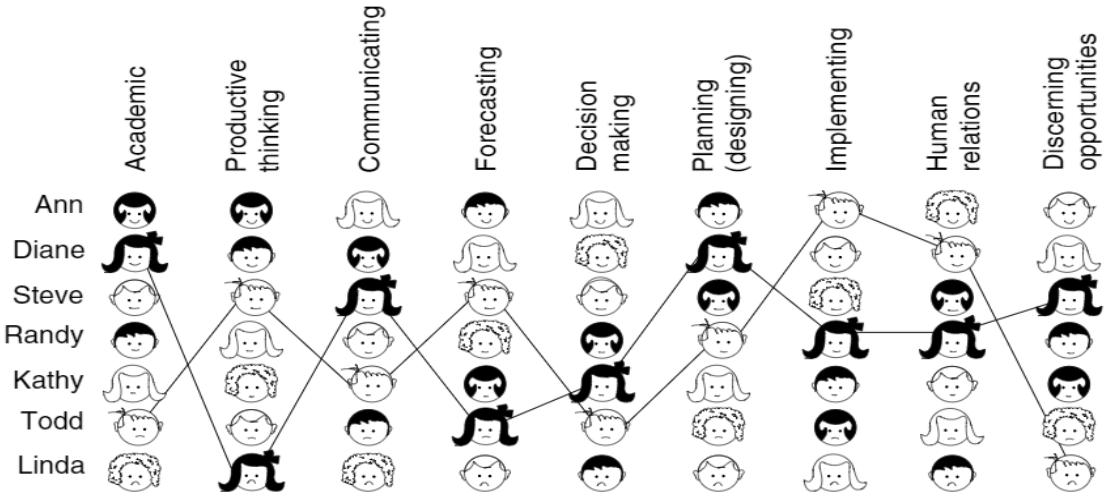


Figure 2: Taylor's multiple talent totem poles

Figure 2 illustrates the differences in the multiple talents that can be observed among children. Such programmes as the talents unlimited can result in significant increase in the students' levels of motivation to excel and be creative. They may even encourage the students to overcome all the challenges that previously obstructed their progress, develop their individual talents, and seek originality and creativity. Or as Zhang et al (2018) stated that they would mediate the role of creativity because of the growth mind-set, creative achievement, and the absence of stereotypes. The type of educational institute we envisage is required to cater for the talents of the students and to guide them to the stimuli that would reward their creative behaviour [8]. This is because one of the most important factors that affect students' emotional and social needs is their immediate environment as it plays an important role in their social and emotional development through fostering and utilizing their talents and, hence, limit the development of any problems they may suffer [9]. By adopting the talents unlimited model, we may discover the glaring differences between what is practiced now and what such an approach can achieve. This model gives all students the opportunity to use their innate capabilities and talents and their higher thinking skills. Based on reports from the successful adoption of the model in schools, the implementation of the model requires: training the teachers to identify and foster the students' different abilities, developing teaching materials for the regular classrooms that enhance the students' thinking skills, and enhancing the students' thinking skills including their academic achievement, creative thinking, and self-concept (Taylor, 1978). In addition, the model aims to encourage the students to practice their skills in the classroom through engaging them in continuous research and exposing them to real-life problems, thus, providing them with reasonable information about their achievement.

Where the model was adopted, the main objective was to enhance and develop all the students' higher thinking skill. This should be also our objective if we wish to retain our competitiveness. What might facilitate the implementation of the model is the fact that teachers would like to avoid stymying their students' interests and development. This reflects the significant role of the educational system and the quality of the school programmes as they send the message that they expect the students to challenge themselves and supports such behaviour (Scott et al, 2015). For the educational system to adopt the model to improve the quality of school education and the students' performance, there is a need to revise the curricula and teaching methods and, consequently, the assessment methods. Through class work, lesson, and activity, the teacher will be required to activate the students' skills and provide them with the opportunity to utilize their different talents [10]. Bellis (2019) gave the following examples of the activities that could be implemented in these classes: (1) Developing an idea for an invention, (2) Brainstorming creative solutions, (3) Executing the invention, (4) Naming the invention, (5) Marketing activities for an idea of their choice, (6) Parent participation, (7) Young Inventors Day.

Although students benefit from activities that aim at developing their thinking skills that are not part of their curriculum, it is preferred that these activities do not take place in isolation of the school curriculum and activities. Research has shown that all lessons and activities spurn students to use their problem-solving skills (Aljamal et al, 2003). If the model is effectively implemented, the resulting mix of skills and knowledge will provide the students the opportunity to succeed in an academic environment that rouse their interests and give them the tools to succeed. As the main component of the talents unlimited model is the student's performance, and the main concern of contemporary educators is the challenges

the students may face in this rapidly changing age of information, more attention has been given to the teaching of divergent thinking, investigation, discovery, problem solving, and creative thinking. Aldilimi (2005) recommends thinking teaching programmes, particularly the talents unlimited model, in all schools as they develop thinking patterns that reside in both hemispheres. Research conducted by Aldahan (2013) and Newman (2005) suggest that the talents unlimited model helped students to learn planning, time management, and discipline. These studies recommended that the model is adopted in real life to help students overcome future challenges, display creative behaviour, and excel at their future endeavours.

However, the real obstacle to adopting this model is that educational programmes still seek to improve the students' performance on surface skills and not on how to enhance their capabilities and enable them to utilize their skills in the classroom. Meanwhile, the talents unlimited theory promotes that the students' practice of divergent thinking in discovery situations. Its applications and strategy have benefitted the students by providing all of them with opportunities for creativity, developing their thinking skills, and preparing for the challenges of the future. In addition, the model enables the student to fully utilize the social, technical, and natural resources available to them to successfully apply the behavioural skills they have learnt which is major requirement for productive creativity. Olszewski (2016) believes that developing the students' skills and giving them the opportunity to choose the behavioural skills they need can enable them to display high levels of performance and excellence and increase their motivation for creativity.

The appropriate school curriculum gives multitalented students the freedom to explore different areas that match their abilities. Abstract information is not sufficient to develop the students' divergent thinking skills and discovering relationships [11]. In contrast, supporting the students to practice their skills and talents in the classroom through developmental research and exposing them to real-life problems would achieve these goals. Thinking skills programmes help build the students' personalities and increase their self-confidence. It is this creative confidence that would improve their ability to make better choices [12]. Engaging the students in investigation and searching for information enables them to connect different concepts through providing them with the appropriate resources, guided discovery, and supporting their understanding of difficult concepts which motivates them to be more creative in the future [13]. In addition, the school environment is probably the ideal context to enabling the students to generate innovative ideas and, consequently, better adapt to this age of information and technology. Research has revealed that the talents unlimited model helps the students become active learners and develop their innate self-concepts which play an important role in turning their abilities to behaviour and creative achievements.

The students' motivation for creativity is best represented by the talents unlimited model which provides them with important tools and strategies for developing their thinking skills and transcending their sensory barriers to adopt such practical skills such as planning, forecasting, decision-making, and communication and, hence productivity. Creativity requires the investment in the individual's thinking styles and skills, the motivation to overcome challenges, and an environment that reduces challenges and accepts that new ideas and activities entail risks [14]. With confidence and motivation, a creative mind-set can be transformed to a sustained motivation which would indirectly affect the individual's overt creative behaviour. Motivation is the force that compels the individual, in high purpose and value experience, to perform, learn, and achieve new things (Zhang, Hoxha, Aljughaiman, et al, 2018). This is why contemporary frameworks focus on detect certain behaviours in the individual to assess her creativity and her levels of motivation to be creative. These views on the motivation for creativity and confidence are in line with the ideas presented in the talents unlimited model.

The researcher sought to link the motivation for creativity and the attitudes it entails (including a high-quality experience, an effective purpose, and the value that drives individuals to behaviours related to creativity that manifest in their performance, learning, and accomplishing new things), and creating a learning environment and what the training programme sought to provide the students. The training programme consisted of activities for thinking skills and new and exciting ways of learning, during which students work on addressing the problems presented by planning, searching for the best solutions and forecasting, and accepting the best of them. In addition, it engaged the students in different activities while working in an environment that fostered a passion for learning new things. It also fostered discovery and encouraged the students to develop new interests that would motivate them to use their skills beyond the school context and in their future lives.

It worth noting here that the model does not pose many challenges when applied in regular courses as students can still cover the required study materials at the same pace as in traditional classes. What it requires is the improvement of the students' divergent thinking, and motivation to be creative.

The significance of this study stems from that to my knowledge, it is the only such study that focuses on employing the talents theory in enhancing the students' motivation for creativity. Most literature on creativity has focused on the patterns of learning in the two brain hemispheres and personality traits. Based on the findings of previous studies, this study attempts to answer one main question: what is the impact of talents-unlimited-theory based activities on the development of divergent thinking skills and the development of motivation for creativity among UAE primary stage students?

Moreover, the study tests the following hypotheses:

1- There are no statistically significant differences at (α= 0.05) in the students' average performance on the divergent thinking scale, and the motivation scale between the experimental and control groups before the implementation of the training programme.

2- There are no statistically significant differences at (α= 0.05) in the students' average performance on the divergent thinking scale between the experimental and control groups that can be attributed to the training programme.

3- There are no statistically significant differences at (α= 0.05) in the students' average performance on the motivation scale between the experimental and control groups that can be attributed to the training programme.

4- There are no statistically significant differences at (α= 0.05) between divergent thinking and the motivation for creativity.

5- There are no statistically significant differences at (α= 0.05) in the students' average performance on the divergent thinking scale, and the motivation scale in the post-experiment and follow-up measurements among subjects in the experimental group.

1.1. Aims of the study

The aim of this research is to develop a teaching programme based on the talents unlimited model. It also seeks to determine the impact of such programme on the development of divergent thinking skills and the development of motivation for creativity. The specific objectives of the study are:

- Developing a training programme for sixth grade students that is based on the talents unlimited model and assessing its effectiveness in developing the students' divergent thinking skills and motivation for creativity.
- Studying the impact of the divergent thinking skills on developing the students' ability to use its strategies.
- Determining the effectiveness of the talents unlimited programme in developing the students' motivation for creativity
- Determining the effectiveness of the talents unlimited programme in developing the students' divergent thinking skills
- Providing measurement tools that have been field tested on the environment of the UAE.

1.2. Significance of the study

The significance of this study lies in the following:

- Training the students to use divergent thinking skills strategies.
- Developing a training programme that contributes to increasing the students' ability to communicate and solve problems in creative ways in their daily lives, increase their cognitive productivity, and increase their motivation to learn to the maximum extent possible
- Developing a training programme that teachers can implement and utilize to enrich the learning process and curriculum development.
- Helping students acquire creative skills, for example: communication, planning, forecasting, decision-making, and productive thinking.
- Supporting curriculum designers in selecting topics that focus on implementing divergent thinking skills strategies.
- Assisting those in charge of teacher training programmes by developing mechanisms for their training programmes
- The study contributes to increasing the understanding of the educational reality, highlights the importance of thinking skill development programmes, and draws the decision-makers' attention to their importance and uses.

2. Theoretical Background

2.1. Key Terms

2.1.1. Training Programme

For the purposes of this research, the programme is defined as a selection of activities and plans that have been designed specifically to improve the students' divergent thinking skills under the supervision of the Ministry of Education [15]. It

is also a number of training experiences and academic activities that are based on the strategies mentioned in the talents unlimited model that aim to develop the students' divergent thinking skills and their motivation for creativity.

2.1.2. Talents Unlimited Theory

This is the pedagogical theoretical basis for the talents unlimited model which include the aims that would guide the teachers while equipping their students with the appropriate tools they need to express their intelligence including productive thinking, communication, forecasting, decision-making, and planning. Taylor believes that when students are presented with these talents in a hybrid class, 9 out of every 10 of them would succeed in at least one of these areas.

The talents unlimited theory is one of the most widely accepted thinking theories. It is acknowledged as one of the most effective approaches to enabling the students to improve and develop their creativity and complex cognitive processes [11].

2.1.3. Divergent Thinking Skills

A divergent thinking skill is the ability to analyse, synthesis, evaluate, develop, assess, generalize, generate ideas, make decisions, set objectives, and think critically and coherently (Dillon & Scott, 2002, Miri, David, & Uri, 2007, Zohar & Dori, 2003). For the purposes of this research, divergent thinking skills refer to the students' performance in this area on the divergent thinking scale (Frank Williams, 1993).

2.1.4. Motivation for Creativity

This is the force that simulates individuals to engage in creativity-related behaviours and which are manifested in their performance, learning, and achieving new things (Zhang, Hoxha, Aljughaiman, et al, 2018). In this research, it refers to the students' performance on the motivation scale that was specifically designed for this research by the author. The scale consists of 29 items divided into six areas: intrinsic goal orientation, extrinsic goal orientation, the value of learning tasks, control of learning beliefs, self-efficacy in learning, test anxiety.

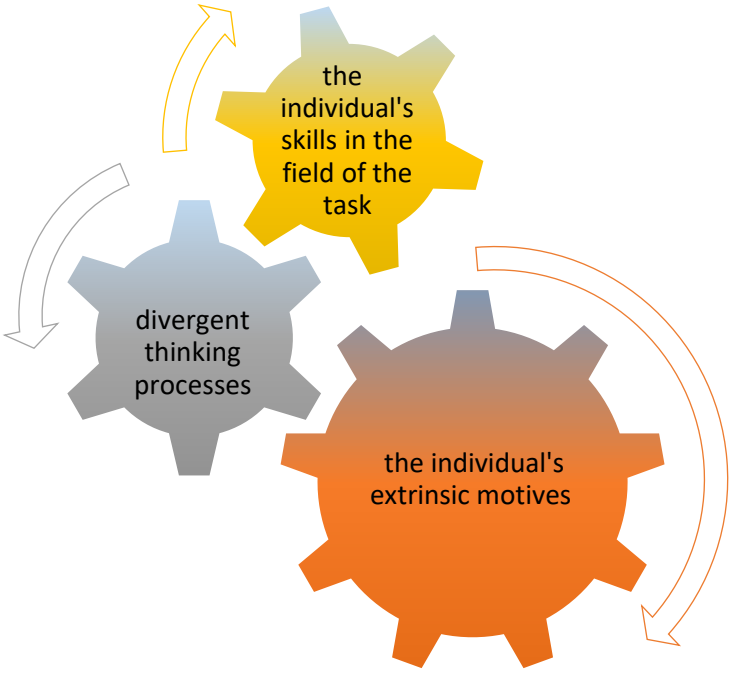


Figure 3: Classification of the Motivation for Creativity Skills

3.1. Scope of the Study

- Time scope of the study: the study was conducted in the academic year 2018/2019.
- Geographical scope: second cycle basic education schools in the emirates of Sharjah, and Fujairah, UAE.
- Procedural scope: the research is limited to the experimental approach, its tools, the psychometric features of these tools, the results of the statistical formulae used, and the training programme that was delivered to a number of year 6 students according to the principles of the talents unlimited model for the development of divergent thinking skills and the motivation for creativity.

3.2. Research Approach

Research Method and Variables

To achieve the aims of the study, the researcher adopted the quasi-experimental approach to evaluate the effectiveness of the training programme to test the research hypotheses. The subjects of the study were divided into an experimental group of male and female students, and a control group comprised of male students (the sample of the study). The performance of the subjects of the control group was compared to each other and to that of the experimental group on the pre-test and post-test. Their scores on the follow-up test for the dependent variables scale.

Research Variables

- The independent variable: the training programme
- The dependent variables:
  - Divergent thinking skills
  - Motivation for creativity

3.3. Population of the Study

The population of the study comprises all sixth grade students in the emirates of Sharjah and Fujairah, UAE. According to the UAE Ministry of Education' figures, the total number of these students is 4895 attending 28 schools.

3.4. Sample of the Study

The sample of the study comprised 42 students attending Alnouf Basic Education School in Sharjah, and Albadyah Basic Education Boys School in Fujairah. The control group consisted of 21 sixth graders during the academic year 2019 who were randomly selected and responded to the divergent thinking and motivation measurement scale.

3.5. The Talents Unlimited Programme

The main objective of the programme is to develop the target students' divergent thinking skill and motivation for creativity. This is done through exposing the students to training sessions and experiences, and educational activities that are based on the strategies of each of the talents mentioned in the talents unlimited model.

3.5.1. Aims of the Programme

- Enhancing the students' sensory perceptions by employing new, valuable and interesting ways of thinking and learning that suit their talents.
- Providing the students with the appropriate tools for problem-solving, creative thinking, and working to achieve solutions to existing problems.
- Providing the students with the opportunities to ask questions, express their ideas freely and spontaneously, remain active thinkers, and use their imagination to generate ideas.
- Improving the students' writing skills and their ability to express their opinions in novel and personal ways.
- Training the students to make sound decisions and take responsibility.
- Encouraging the students to acquire positive attitudes to learning and interacting with others.
- Enabling the students to acquire the appropriate attitudes that enhance their self-esteem and efficiency and stimulate their motivation to creativity.

3.5.2. Programme Design

A number of lessons was devoted to each of the thinking skills mentioned in the talents unlimited model (planning, decision-making, forecasting, communication, and productive thinking). The lessons presented advanced training processes that appropriate for each skill. They aimed at developing the students' cognitive abilities to enable them to think creatively and achieve new things of value to them.

The students were familiarized with the way the programme would be delivered to help them understand each skill, how to acquire these skills, and how to improve their performance on them whenever they are faced with new life challenges.

3.5.3. Academic Content

- Planning is the identification of the methods that would be used to implement the programme, their sources, their sequence, potential challenges, and plan improvement.

- Decision-making is the ability to summarize and comparing the available options, reach a decision, and supporting that decision.
- Communication is the verbal and/or non-verbal expression of ideas, emotions, and needs.
- Productive thinking is the ability to generate varied and unconventional ideas and adding details to increase the importance of these ideas.
- Forecasting is the ability to deduce the causes or results of a particular phenomenon.

3.5.4. Programme Evaluation

The programme was presented to a group of reviewers, teaching supervisors, and curriculum design experts to evaluate every aspect of the programme:

- The extent to which the programme is based on the talents unlimited theory and the skills it mentions.
- The clarity and appropriacy of the language used for the target students' age group.
- The duration and time allocation of the lessons.
- The sequencing of the talents in the programme.
- Whether the programme achieved its expected outcomes.

3.5.5. Duration of the Programme

The programme is implemented four sessions per week. The five components of the programme (planning, decision-making, forecasting, communication, and productive thinking) receive equal amounts of time, while maintaining the programme's aim to improve the students' divergent thinking skills and motivation for creativity. The programme consists of 21 45-minute sessions. The first of these is an orientation session where the objectives of the training programme are explained, the components are presented, ways to learn these components explained, and the students' rights and obligations to work are presented. In the final session, the students discuss how they benefitted from the programme and sit the post-test.

3.5.6. Programme Implementation Procedures

1- Obtaining permission to conduct the research.

2- Identifying and assigning the subjects to the control and experimental groups. Students in the control group will not receive the training programme, while those in the experimental group will.

3- Meeting students in the control and experimental groups who will undergo the pre-test, post-test and the training programme.

4- Setting, introducing, and committing to the schedule for implementing the programme

3.5.7. The Training Sessions

Appendix A shows is the schedule for each training session.

4. Research Tools

4.1. Motivation Scale

The motivation scale measures the students' levels of motivation before and after the implementation of the programme. It specifically measures the impact of the training programme and the activities it includes for thinking skills and brainstorming (for example, productive thinking, communication, forecasting, planning, and decision-making) on the students' motivation for creativity.

To achieve the aims of the study, and after consulting the literature, the motivation scale developed by Pintrich, Smith, Garcia, and Mckeachie (1991) (translated by Al Samah in 2008) was specifically modified by the researcher. The modified version of the scale consists of 29 items, and 6 sections: intrinsic goal orientation, extrinsic goal orientation, the value of learning tasks, control of learning beliefs, self-efficacy in learning, and test anxiety.

The internal consistency coefficient was measured using the Cronbach's alpha equation, where the stability coefficient of the total degree was (0.79), which is suitable for the purpose of the research. Table 1 below shows the values of the

stability coefficients of the motivation scale and the Cronbach's alpha coefficients for the sections and the total score on the scale. Table 1 below shows that the correlation coefficient between the different sections and the overall score is statistically significant at (α= 0.05).

Table 1: Stability Coefficients

	Test-Retest Reliability	Internal Consistency	Number of Items
Intrinsic goal orientation	0.83	0.77	4
test anxiety	0.81	0.80	5
value of learning tasks	0-.84	0.82	5
self-efficacy in learning	0.86	0.79	6
extrinsic goal orientation	0.80	0.86	4
control of learning beliefs	0.79	0.86	5
Total	0.86	0.79	29

4.2. The Divergent Thinking Skills Scale

For the purposes of this study, and after consulting the literature, the researcher concluded that the divergent thinking test developed by Frank Williams. Williams, F. (1993)

5. Results of the Study, Discussion, and Interpretation

To answer the first research question (what is the impact of talents-unlimited-theory based activities on the development of divergent thinking skills and the development of motivation for creativity among UAE primary stage students?), the hypotheses posed in relation to that question were tested.

5.1. The first hypothesis

The first hypothesis is that there are no statistically significant differences at (α= 0.05) in the students' average performance on the divergent thinking scale, and the motivation scale between the experimental and control groups before the implementation of the training programme. The aim of this hypothesis was to ensure that both research groups were compatible before the application of the training programme. The results of the T-test (table 2) show that the differences between the scores of the two groups the pre-measurements of the divergent thinking and motivation scales were not statistically significant at (α= 0.05). This indicates that members of the two groups were compatible in their divergent thinking skills and the different parts of the motivation scale before the implementation of the programme.

Table 2: Results of the T-test of the Scores of the Control and Experimental Groups on the Pre-test

	Scale	Group	Mean	Standard Deviation	T Value	Significance
Overall	Divergent Thinking Skills	Control	56.71	17.687	- 1.17	0.24
		Experimental	62.00	10.445		
Overall	Motivation	Control	2.31	0.68	- 0.121	0.454
		Experimental	**2.35**	**0.23**		

5.2. The second hypothesis

The second hypothesis is There are no statistically significant differences at (α= 0.05) in the students' average performance on the divergent thinking scale between the experimental and control groups that can be attributed to the training programme. The data show that there are apparent significantly significant differences between the average scores of the two groups that can be attributed to the programme. It can be seen in table 3 below that on average the experimental group scored higher than the control group on the post-test in all five skills associated with divergent thinking (the title, details, originality, flexibility, and fluency) and achieved higher average overall score.

Table 3: Performance of the Control and Experimental Groups on the Divergent Thinking Skill Test

Divergent Thinking Skills	Control Group		Experimental Group	
	Average	Standard Deviation	Average	Standard Deviation
Pre-test total score	56.71	17.687	62.00	10.445
Post-test total score	57.00	13.17	85.38	10.042

It is clear that the total score of the experimental group (85.38) was higher than that of the control group which stood at 57.00. Furthermore, the MANCOVA covariant analysis of the differences of the mean scores at (α= 0.05) between the two groups shows that there is a statistically significant difference between the scores of the two groups on the William's post-test in favour of the experimental group. The MANCOVA covariant analysis also indicates that the unlimited talent model had a clear impact on the students who attended it as there was an effect at the level (α = 0.05) for the training programme variable on the divergent thinking scale, where the value of P reached 18.78 for the title, 11.03 for details, 15.17 for originality, 344.60 for flexibility, and finally it reached 288.60) for fluency. These values are all related to a probability equal to 0.000.

Table 4: Statistical Analysis of the Subjects' Scores on the Divergent Thinking Post-test

Contrast source	Dependent Variable	Experimental Group		F Value	Significance at (α = 0.05)		Eta	η^2	effect size
		Standard Deviation			significance level				
The programme	The title	19.29	3.663	18.781	.000	Significant	.582	.339	Medium
	Details	16.05	4.260	11.030	.002	Significant	.493	.243	Medium
	Originality	22.71	4.808	15.178	.000	Significant	.550	.303	Medium
	Flexibility	10.95	0.805	344.605	.000	Significant	.950	.902	large
	Fluency	18.10	1.609	288.608	.000	Significant	.940	.883	large

This statistical analysis reveals that:

1- There is a statistically significant difference between the mean scores of the control and experimental groups on the divergent thinking pre-test and post-test in favour of the experimental group.

2- There is a statistically significant difference between the mean scores of the control and experimental groups in favour of the experimental group.

3- There is a statistically significant difference between the mean scores of the control and experimental groups on each of the individual items of the post-test in favour of the experimental group.

4- There is a statistically significant difference between the total mean scores of the control and experimental groups on the post-test in favour of the experimental group. There is also a positive effect size of the activities of the talents unlimited programme on the divergent thinking skills.

5- The eta-squared value between the dependent variable (the activities of the talents unlimited model) and the independent variable (thinking skills) shows a positive effect of the application of the programme in regular classes and during the short time it was implemented.

6- There is a statistically significant difference (at 0.002) between the mean scores of the students in the experimental group and the control group in the five skills (the title, details, originality, flexibility, and fluency).

A careful analysis of the students' scores on the different sub-tests of the William's divergent thinking test, it emerges that: Williams, F. (1993)

- There is an effect and a statistically significant difference between the mean scores of the two groups on the post-tests of the title, details, and originality in favour of the experimental group.
- The activities of the talents unlimited model had a big effect on the development of the students' flexibility and fluency as eta-squared value reached 0.940. This indicates that students in the experimental group surpassed their peers in the control group in these two divergent thinking skills.

5.3. The third hypothesis

The third hypothesis is that there are no statistically significant differences at (α= 0.05) in the students' average performance on the motivation scale between the experimental and control groups that can be attributed to the training programme. A careful investigation of the programme shows that it primarily focused on providing the students with broad support to help them develop their divergent thinking skills and their motivation for creativity. In addition, analysis

of the eta-squared value of the students' scores on the motivation scale indicates that the programme had a statistically significant effect (table 5).

Table 5: eta-squared values and the effect size of the motivation test

Contrast Source	**Dependent Variable**	η^2		**Effect Size**	
The programme	**Intrinsic goal orientation**	0.1444		Medium	
	test anxiety	0.2401		Medium	
	value of learning tasks	0.0625		Medium	
	self-efficacy in learning	0.1089		Medium	
	extrinsic goal orientation	0.1936		Medium	
	control of learning beliefs	0.1444		Medium	
	Intrinsic goal orientation	0.2401		Medium	
	test anxiety	0.0625		Medium	
Total		2.63	0.4	3.47	0.43

Table 5 shows that there was a positive effect of the programme and the students' scores on the post-test reveal that there are statistically significant differences between the control and experimental groups on all aspects of the motivation test (intrinsic goal orientation, extrinsic goal orientation, the value of learning tasks, control of learning beliefs, self-efficacy in learning, and test anxiety). This means that the programme had a positive impact on the motivation of the students in the experimental group during their regular classes because of its motivating activities and its creativity-fostering environment. Sternberg & Lubart (1995) stress that stimulating creativity through external factors might be highly effective.

It is essential to provide extrinsic motives to encourage the students to express their innate talents through self-regulation. This is one of the issues that I investigated and attempted to implement in this study which has revealed that in spite of the short duration of the programme and the circumstances it is implemented under, the programme had a noticeable positive impact on the students. It is possible to foster and develop the students' creativity and intrinsic motivation if their teachers give them the opportunity to discuss their interests. This would help them enjoy learning. Furthermore, we can foster and increase the adults' intrinsic motivation to work if their employers provided them with an environment that allowed them to freely exchange ideas, and express and implement their interests in creativity-fostering learning environment [16].

Based on the data presented in table 5, we can conclude that:

1- There is a statistically significant difference between the mean scores of the experimental and control groups on the overall motivation post-test in favour of the latter group and that the effect size of the programme was positive.

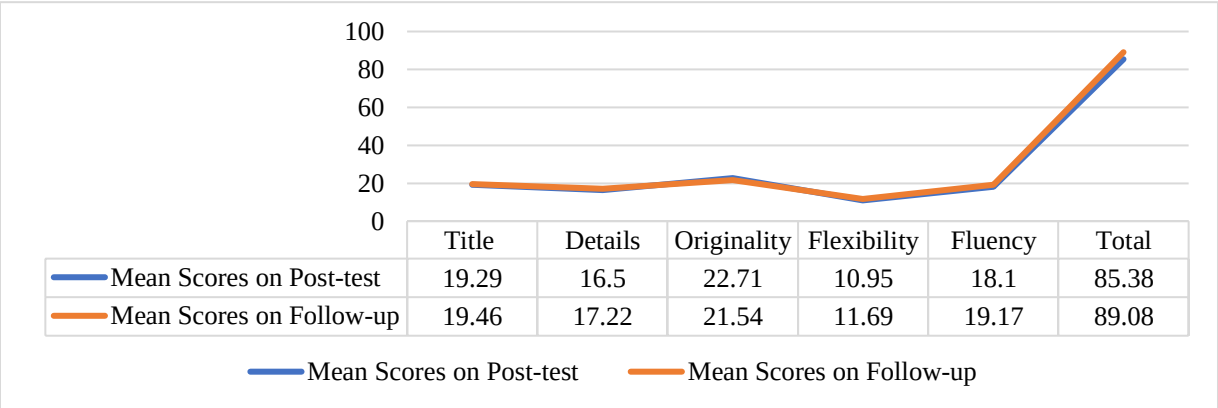
2- The eta-squared value between the dependent variable (the activities if the talents unlimited programme) and the dependent variable (motivation) is showing a positive impact in spite of the negative challenges that we faced while implementing the programme especially for such a short time.

3- There is a statistically significant difference (at 0.000) between the mean scores of the students in the experimental group and the control group in intrinsic goal orientation, extrinsic goal orientation, the value of learning tasks, control of learning beliefs, self-efficacy in learning, and test anxiety.

5.4. The fifth hypothesis

The fifth hypothesis posed by the study is that there are no statistically significant differences at (α= 0.05) in the students' average performance on the divergent thinking scale, and the motivation scale in the post-experiment and follow-up measurements among subjects in the experimental group.

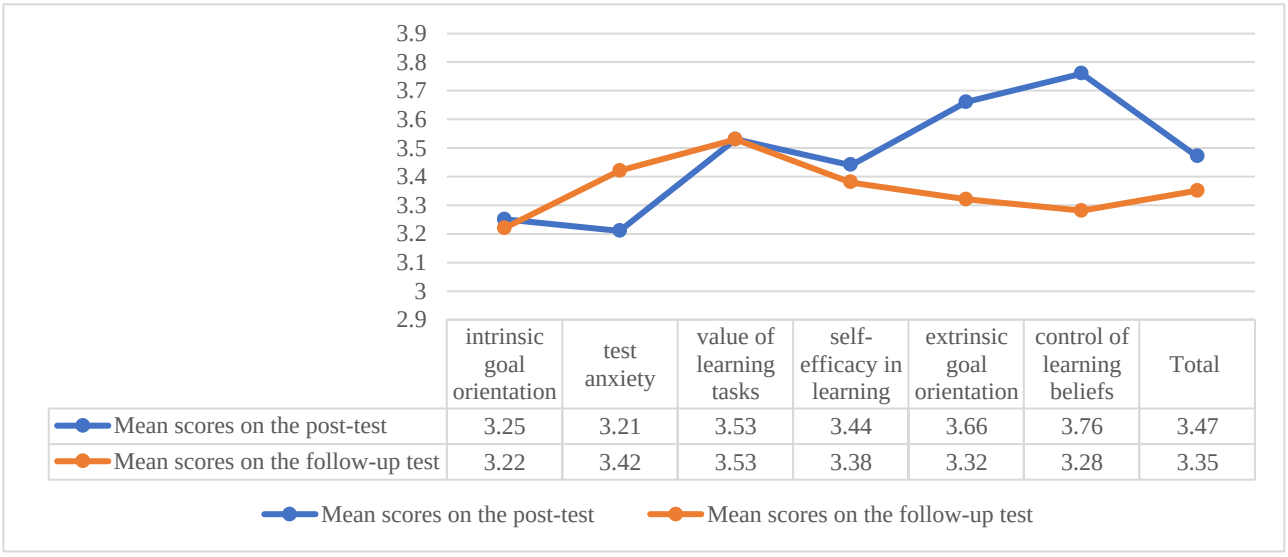
The t-test reveals that there are no statistically significant differences at (α= 0.05) in the students' average performance on the divergent thinking scale, and the motivation scale in the follow-up measurements among subjects in the experimental group and in all areas concerned. This suggests that the impact of the programme has been sustained by the students (see table 4).



	Title	Details	Originality	Flexibility	Fluency	Total
Mean Scores on Post-test	19.29	16.5	22.71	10.95	18.1	85.38
Mean Scores on Follow-up	19.46	17.22	21.54	11.69	19.17	89.08

Figure 4: A comparison between the mean scores on the post-test and follow-up test of the creativity scale of the students in the experimental group

Figure 5 below shows a comparison between the mean scores on the motivation post-test and follow-up test of students in the experimental group.



	intrinsic goal orientation	test anxiety	value of learning tasks	self-efficacy in learning	extrinsic goal orientation	control of learning beliefs	Total
Mean scores on the post-test	3.25	3.21	3.53	3.44	3.66	3.76	3.47
Mean scores on the follow-up test	3.22	3.42	3.53	3.38	3.32	3.28	3.35

Figure 5: Comparison between the mean scores on the motivation post-test and follow-up test of students in the experimental group

The sustained impact of the programme can be attributed to the comprehensive nature of the programme and its activities that gradually increase in difficulty some of which also challenge the students enough to stimulate them. In addition, the activities were designed for implementation in the regular classes in line with the findings of many studies that have demonstrated the effectiveness of such strategy. The researcher also utilized the activities of the programme to develop the students' motivation for creativity. The programme specifically included activities that matched the students' interests through linking these activities and projects to the students' personal and social lives. The activities were designed as real life tasks that provide the students with varied opportunities for discovery in the form of challenges, stories, issues, and puzzles that would intrigue the students enough to seek information about the topic [17].

6. Discussion

The data collected for this study shows that the activities of the talents unlimited programme had a positive effect on the divergent thinking skills and motivation for creativity of 6th year students in the experimental group. This is in line with a number of previous studies (see for example, Aldilimi, 2005 and Talafahah, 2009). For example, Aladwani's experimental study on the effect of the talents unlimited programme on 3rd year students in Kuwait [11]. In addition, the programme had a significant positive impact on the thinking skill of the subjects of the study indicating that the programme is suitable for the Emirati context. This supports claims that is the model has proven its effectiveness worldwide (see for example, (Aldahan, 2013 and Aldilimi, 2005). As a result, I propose that the programme is implemented in the regular classes and with all students not all only those identified as gifted. This is because the

programme provided the subjects of the study with the opportunity to engage in effective, real-life tasks that stimulated their interest and motivation. The findings of a study conducted by Zhang et al (2018) suggest strongly that intrinsic motivation is closely linked to creativity. This is because strong intrinsic motives spurn the individual to seek valuable learning opportunities and to fully engage in such activities. It is, therefore, the duty of the teacher to provide her students with varied opportunities for learning and creativity (see Amabile & Gryskiewicz, 1989).

The positive impact of the programme may be attributed to the type of activities that the subjects engaged in during the experiment. These activities required the students to utilize their divergent thinking skills and, thus, gave them the motivation to be creative. This is because motivating factors include such concepts as beliefs and skills which determine the student's levels of interest and desire to achieve her goals. Consequently, the programme aimed to help the students develop positive self-concepts which we believed would help them succeed in their future pursuits because of the skills that these students acquired during the programme. Practicing such skills as planning, for example, would enable the students to successfully and effectively complete future tasks. Therefor students were trained on planning at the start of this programme to facilitate their acquisition of the other skills that they were to practice later in the programme.

Another factor that contributed to the positive impact of the programme is that the students were challenged. Students competed to present their ideas orally or in writing including writing reports and messages. Some students showed great skill in delivering speeches, conducting interviews, and writing. Moreover, the diversity of the activities enabled the students to express their interests and motivated them to be creative. This is in line with the findings of a study that found that intrinsically motivated students produced more creative poems [16], and another that demonstrated that students who were intrinsically motivated to engage in certain learning activities showed long-term excellence [18]. This is because students who achieve the pleasure of freedom and are self-motivated to learn are characterized by intense focus and enjoyment (Csikszentmihalyi, 1993 and 1996).

7. Recommendations

Based on the results of the study, it is recommended that further studies should focus on the implementation of the talents unlimited model as part of the school's regular curriculum, to be applied as a vital and future alternative for students from remote areas, as programs that ensure fair representation of students of this sector with talent. It is also recommended that further studies should be conducted on different Subjects (middle, secondary, and tertiary levels) to compare with the results of this study.

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Appendix A:

Program implementation mechanism. The table shows the distribution of the lessons of the program parts over the days of the application period for the two experimental units. table shows the distribution of the lessons of the program parts over the days of the application period for the two experimental units.		
Session number	Session title	Number of meetings
	Introduce students to the program and its importance	1
First session	(The first part of the program / Planning skill): Introduce: Definition of the primary goal of planning skill. -Planning for a school party and arrangement and invitation procedures. -Planning to organize a school trip to a tourist area. -Planning To set the basic behavioral rules in school and class. -Planning to hold an exhibition of formal arts at the school.	5
second session	(The second part of the program / -making decision). Introduce: Definition of the primary goal of making decision skill. making decision in the animal Zoo How to prevent visitors from feeding animals making decision A factory suffers from various production problems, what will you do as a manager? making decision Your friend of your friend will stand in front of the fire, you begin to burn it, decide what to do? making decision: Your friend is bleeding in school from the nose: Decide what to do?	5
third session	(The third part of the program / prediction). Introduce: Definition of the primary goal of prediction. Prediction about the various and varied events that could cause extinction Dinosaurs . Prediction about What happens to life if the seasons of the year are similar to the winter. Prediction about :Second World War‖ What could happen if Japan had won in the second world war? Prediction about: What could happen if fuel filling stations were closed?	5
Fourth session	(The fourth part of the program / communication). Introduce: Definition of the primary goal of Communication: -Students make comparisons numerous and varied. -comparisons in the form of similarity using a word. I am brave Such as I am witty just like… I am just human Such as… -Communication: Attributes and characteristics. Communication : wrote money that quotes four characteristics that you notice in both the coming things and thought about giving one reason each. Communication : Feelings and ideas During the concentration on Language is not verbal.	5
Fifth session	(Fifth Part of the Program / Product Thinking). Introduce: Definition of the primary goal of Product thinking: Fluency: Think about adding a fourth word, which can be linked to the three words that precede it, as it becomes a well -known crossing Words: paper, lie, flag Creativity by mobility :an idea that looks wrong to an acceptable idea, or in other words, is the use of an idea and to move from it to Another new idea. Thinking patterns and seven intellectual languages, Visually, Numerically, Logically, Sequentially, Emotionally, conceptually. Integration: The integration is between the two words; we note that we will find new ideas" glasses and pen" The glasses industry contains one of its arms on a pen….	5