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The Effectiveness of Using the Strategy of Hybrid learning Model in Developing Creative Thinking for Eighth-Grade Basic Students in the Subject of Science for All

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Abstract:

The study aims to identify (The Effectiveness of Using Strategy of Hybrid learning Model in Developing Creative Thinking for the Eighth Grade Basic Students in the Subject of General Science), from the current aim of the study, two null hypotheses were formulated, one of which is a comparison between the experimental and control group in the development of creative thinking, and another one is about the pre and post-tests for two groups. And the researcher used the (Torrance) formal test for creative thinking (Picture - B -) in line with the sample. For the two groups, the study sample consisted (of 46) mixed students of the eighth grade in the city of Soran for the academic year (2020-2021), for the two groups (23) students for the experimental group and (23) students for the control group, where the experimental group was taught according to the hybrid model and the control group was taught according to the usual method. The two groups are equivalent in several variables (achievement of science subject for the previous year, intelligence, average degree for the previous year, chronological age calculated in months, previous information, academic levels for parents, creative thinking test), and a set of teaching plans for the two study groups were prepared and provided by specialized experts in this field. after the end of the experiment, the data were statistically processed using the (Spss) program, and the results indicated that there were differences and statistical significance at the level of (0.05) for the creative thinking test (pre-post) for the students of the two groups, who studied according to the hybrid model in favour of the post-test, and there is also a statistically significant difference between the average degrees of the two groups, in favour of the experimental group for post-creative thinking degrees. In light of

the results, several conclusions, recommendations, and suggestions were presented that serve the purposes of the current study.

Keywords: Strategy, Hybrid, Model, creative thinking.

The Effectiveness of Using the Strategy of Hybrid learning Model in Developing Creative Thinking for Eighth-Grade Basic Students in the Subject of Science for All

Introduction:

The current period is characterized by rapid changes in the outcomes from scientific and technological developments, including knowledge technology. Adapt to these changes. The education system needs to deal with these problems. It can originate from them, such as large volumes of information, and increase the number of students together with the teacher Shortcomings, These changes in science and technology started many new teaching and learning methods such as e-learning and hybrid learning (HL), especially in study and development. (Mousa & Mubarak, et, al, 2005). E-learning has had a significant impact on the educational process. Because it has supplanted traditional classrooms and modernized teaching methods to allow students to learn whatever they want, whenever they want, e-learning has become the era's trend. (Qeshta, 2016). By focusing on student-centred learning, instead of teacher-centred learning, the most effective type of education is one that fosters a love of learning and makes the educational process more exciting, dynamic, and livelier with fewer traditional lectures and more projects and reading. As a result of the increasing use of modern technology in the educational

process, the number of teachers who wish to teach their students innovative techniques has expanded. (Bretzman et al, 2013).

Educators' roles, in general, and sciences teachers' responsibilities, are no longer limited to taking full responsibility for the complete educational process, such as teaching methods, introducing them, creating questions and answers, developing teaching materials, and so on. However, the teacher's position has evolved into that of a mentor who allows students to develop through the educational process. The teacher can connect the school to society through teaching science, as well as encourage pupils to work manually and develop scientific and creative thinking, which is at the heart of the educational process. (Bretzman et al, 2013).

In the teaching of science, the use of technology, particularly the computer and the internet, has become an essential principle. It is described as a method for the teaching process in general and science teaching in particular. Many modern strategies rely on the use of modern technologies to activate the learning process, including the hybrid learning strategy, which is considered one of the types of blended learning that uses technology to transfer lectures outside the classroom and is a popular idea nowadays between educators who see this type as an example of a promising and exciting educational innovation. (Al-Samarrai, 2013).

Hybrid learning is an educational approach that combines online instruction with face-to-face instruction. (Garrison, D., Heather K., et, al., 2004), Because of its blending feature, the hybrid format is also considered the best of two worlds providing the benefits of both the online and face-to-face environments (Lamport & Hill, et, al., 2012).

Training students to think is a task that requires attention, enthusiasm, inclination, preparation, qualification and training on the part of the teacher. And if these things are not available, the teacher can randomly train the students. (Qutami,, 2001, p. 205).

Creative thinking is what drives the production of new things from old elements, and this ability is characterized by fluency, flexibility, and originality. And he has a special sensitivity to problems, in addition to his enjoyment of personality characteristics based on independence, perseverance, diverse interests and a tendency to take risks, and creative work is characterized by novelty and non-commonness, in addition to its usefulness to the creative person and to the society in which he lives the products of inventive creativity that result in inventions that benefit humanity. (Al-Rubai, 2004, p. 58).

Statement of the problem:

Researchers and educators focused their efforts on finding innovative teaching methods in which the instructor acts as a guide, mentor, and assistant to help students understand knowledge and how to use it in their life. It stimulates students' thinking, occupies their minds, and does not provide immediate solutions, forcing them to think and discover solutions to achieve satisfaction and conviction. Individually, collectively, or competitively, it tends to solve problems.

Creative thinking is a vital component for the continuation of thinking talents. It is his most important hope for resolving many high-quality problems. Humans attain it, as it is the source of all human progress, as modern and future education focuses on encouraging pupils to decide, evaluate, and debate, as well as

creativity, rather than gathering information, facts, and knowledge and accumulating it among learners.

Science subjects in general are a special field for thinking and a spacious field for the realization of the mind, which makes us re-examine the way of thinking for students in the correct scientific way. Teaching science faces many problems, as it contains many concepts and facts that are difficult to understand if presented in the abstract because some of them are not visible. The reality of teaching science is highly dependent on the traditional method. In which the teacher plays the role of the actor. As for the students, they are recipients of what the teacher says. The traditional method that many science teachers still use is based on indoctrination, which led to a lack of response and participation of all students, as students write down what the teacher says, and this leads to their grumbling and months of frustration. Meeting with several expert instructors and education inspectors, as well as visiting middle schools in Soran City, showed this. Because of the complexity, ramifications, and branching of many scientific concepts that affect everyone in science, the researcher found it hard to believe and understand them, and to limit them to the level of scientific understanding of the most important facts, concepts, and ideas. Hence, the research problem arises in raising this main question: (What effect does the use of Hybrid's model have on the development of creative thinking in science for all eighth graders?).

The objective of the study:

The objective of this study is to determine the effectiveness of the (HL) model in teaching science subjects to eighth-grade students, due to reach the following objective: Identify the effectiveness of using the Hybrid Learning Model in developing creative thinking of 8th-grade students.

Hypotheses of the study:

To achieve the two objectives of the study, the following main and subsidiary null hypotheses were formulated:

1- The first main null hypothesis: First Null Hypothesis: There is no statistically significant difference at the level of significance (0.05) between the average degrees of creative thinking between the students of the experimental group that is taught according to the (Hybrid) model and the degrees of the students of the control group that are taught according to the usual method in science for all.

Three sub-null hypotheses were derived from this hypothesis:

1-A- The first sub-null hypothesis: There is no statistically significant difference at the level of significance (0.05) between the average degrees of fluency skill between the students of the experimental group that is taught according to the (Hybrid) model and the degrees of the students of the control group that are taught according to the usual method.

1-B- The second sub-null hypothesis: There is no statistically significant difference at the level of significance (0.05) between the average degrees of flexibility skill between the students of the experimental group that is taught according to the (Hybrid) model and the degrees of the students of the control group that are taught according to the usual method.

1-C- The third sub-null hypothesis: There is no statistically significant difference at the level of significance (0.05) between the average degrees of the skill of originality between the students of the experimental group that is taught according to the (Hybrid)

model and the degrees of the students of the control group that are taught according to the usual method.

2- The second main null hypothesis: Second Null Hypothesis: There is no statistically significant difference at the level of significance (0.05) between the average degrees of the creative thinking test (before - after) for the experimental group students who are taught according to the (Hybrid) model according to the skills (fluency, flexibility, originality, the test as a whole).

The Importance of the study:

We live in the age of science and modern technologies, where the scientific situation dominates all areas of life, science has become a feature that characterizes all aspects of the life of societies, and developments in the fields of science and application are experienced. It affects the progress and possibilities of life and has become a necessity for every society that wants to progress, advance and grow to make use of all the tools and products of civilization. Today's students differ from yesterday's students in their hopes, goals, and expectations. There is an emphasis at present on the necessity of keeping thinking in public life with the individual's personal and social problems and helping him to keep pace with the tremendous and accelerating scientific and technological progress and enabling him to benefit to the maximum extent possible from what has been reached. Thus, students have the right of their society and their educators to provide them with the appropriate skills so that they can grow and develop and conform to the needs of contemporary society, and accordingly, one of the tasks of education has become to train the new generation on thinking skills and to provide the appropriate opportunities that allow them to do so (Omaima & Qatami, 2005).

Hybrid learning is important because it breaks down the traditional walls of teaching, ones that don't work for all students and now with access to present-day technologies and resources we can tailor the learning experience for each student. Hybrid learning also provides for variable time frames that may be tailored to each individual, allowing them to learn at their own pace. Provide a modern technique for teaching science to science planners and experts, and use them in the planning and development of science curricula. Address the scarcity of educational research in science education that addresses similar issues. Develop teaching methods for science teachers that incorporate modern teaching methodologies, such as hybrid learning, to replace traditional teaching methods. Integrate technology with traditional learning to improve the ability of eighth-grade pupils in the intermediate stage to understand science concepts. (Mehring & Leis, 2014).

Encourage science teachers to employ hybrid learning during the teaching process to improve the quality of education, provide recommendations to curriculum developers as well as those who are interested in science education on the use of modern strategies in science teaching and attention to thinking in general and creative thinking in particular, as part of the requirements of the development of our current era. (Al-Dulaimi, 2005, p. 4).

Limitations of the study:

This study is limited to: (Eighth- grade students in the basic school in (Badilian) in the centre of Soran city affiliated with the General Directorate of Education, Erbil Governorate, Both semesters of the academic year (2020-2021), and Units: (A. simple organisms, Algai, Fungi, and Plants, B. Animals, C. Earth's history) of the subject of science for eighth- grade for the schools of

Kurdistan region of Iraq for the academic year (2020-2021) (From pp.6-155).

Definition of the Basic Terms:

A few terms need clarification within this study's discussion of the hybrid course model, It is important to know the definitions through which this study operates to understand the connections between the terms and the theories related to the topic under investigation.

Hybrid learning model: defined by:

(Dziuban, Moskal, & Hartman, 2005) defined it as which the hybrid model that is not contained in the space and time constraints of the traditional course setting, which is the physical campus classroom (Dziuban, Moskal, & Hartman, 2005).

(Allen & seamen, 2010) defined it: as the term that is used to describe a learning situation that combines several delivery methods to provide the most efficient and effective instruction experience by such combination. (Allen & seamen, 2010).

The researcher defined hybrid learning procedurally: as a method where a variety of online resources is provided to learners by the teacher in addition to face-to-face contact.

Creative thinking: It's defined by:

(AL-Atoum, 2004) defined it as bifurcated thinking that includes the generation and modification of ideas to reach outputs characterized by originality, flexibility, fluency, abundance and sensitivity to problems, and it depends on the individual's previous experience and on the individual's ability to not adhere to the limits

of the rules of logic or what is self-evidently expected from people. (AL-Atoum, 2004).

(Solso, 2004) defined it as a cognitive activity that results in a new or unfamiliar way of seeing a problem or finding a solution to a problem. (Solso, 2004).

The researcher defines creative thinking procedurally: A mental activity that involves producing as many ideas as possible to solve a problem based on these ideas that are characterized by fluency, flexibility, and originality.

Theoretical background: the researcher followed the following steps:

First: Hybrid Learning Model:

Education has been revolutionized by the revolution in technology, computers, and information, which has turned its system, concepts, and approaches on their heads, and mastery of education is urgently demanded, but not selected. For today's youngsters, traditional techniques are no longer appropriate. Students are displaying this by, among other things, adding to their smartphones and tablets. As a result, educational institutions must take into account current demands and expectations by developing an engaging and appealing learning environment that caters to the interests of students. Given the findings, educational foundations are given enormous challenges that must be met by a new educational nation and the development of current techniques until educational foundations can equip generations to deal with the variables of the twenty-first century. (Abdulhamid, 2010). From this point forward, a variety of methods for incorporating new technologies into the teaching process have arisen, with the hybrid

learning technique being the most prominent. In the early 2000s, hybrid learning became well-known, and many studies were undertaken to assess its efficiency.

Hybrid learning is a teaching method that uses both online and face-to-face platforms to instruct pupils. Technology is used in and out of the classroom in these courses, such as in online lectures. (It is a modern educational network based on the relationship between face-to-face and online education, which contributes to reducing the student population in schools while maximizing the benefit of teacher competence and university equipment. The student, in particular, develops into a lifelong learner). (Olapiriyakul & Scher, 2006).

The concept of hybrid learning:

When it comes to hybrid learning, it's clear that it's a new concept. It has strong roots that mostly refer to the integration of teaching methods and strategies with various means, and it's known by a variety of names, including Mixed Learning, Hybrid Learning, and Integrated Learning or Learning in two ways. The various names are due to the varying aspects of the type and level of hybrid education. (Abdul- Atai & Al-Mukhini, et al. 2009).

Many definitions of hybrid learning have come about as a result, including 1. It is an integrated system that aims to support the learner at each level of his learning and is based on the combination of traditional and electronic education in its different forms in the classroom. (Al Siliti, 2008).

2. It is a type of education that mixes offline and online learning models, with online learning taking place largely over the

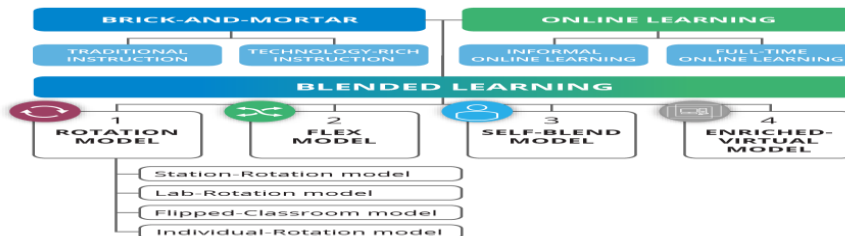
Internet and offline learning taking place in traditional classrooms. (Singh, 2003).

We can finally define hybrid learning as follows based on the previous definitions:

It is a teaching method that aims to assist the student in achieving the desired learning outcomes, and it facilitates the transfer from teaching to learning, as well as from teacher-centred to learner-centred, by combining several kinds of education.

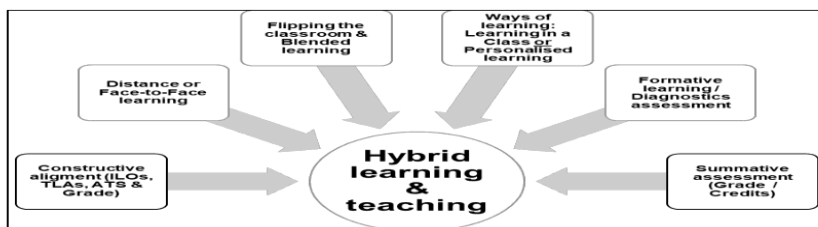
Hybrid learning model:

Depending on the content and instructor's objectives for the course, hybrid learning models can take many various shapes. The researcher came up with one technique to blend virtual and in-person learning in the case above.



Pillars of hybrid learning mode:

Hybrid teaching is based on six pillars (Constructive alignment, Distance learning, Flipping the classroom & Blended learning, Ways of learning, Formative learning and Summative assessment).



Hybrid learning characteristics:

The most essential elements of hybrid learning are: (Changing from a teacher to a student-centred method of education, Increasing student-teacher contact, student-content interaction, and classroom source interaction, Making knowledge available, Integrated student and teacher training and assessment processes collection and Getting the greatest results in terms of development cost and time. (Yulia, 2020).

Advantages of Hybrid Learning:

A powerful tool for recording practice and processes in learning activities, and provides a rich reflective opportunity for practitioners to review their learning activities and their design and their interrelations with students. In other words, hybrid learning enables the student to access materials from anywhere at any time while enjoying the benefits of face-to-face support and instruction. More engaged students, Better information and feedback on work-team teaching, Extended time with students, More leadership roles, Focus on deeper learning, Motivate hard to reach kids, New options to teach at home, More earning power Individualized professional development plans, (Rose, et al. 2009). Increase student interest, Keep students focused for longer, Provide student autonomy, is still a disposition of self-advocacy, Promote student ownership, Allow instant diagnostic information, and student feedback, Enables students to learn at their own pace, Prepares students for the future:

Hybrid learning offers a multitude of real-world skill and that directly translate into life skills, from: (Study skills, Self-learning, Self-engagement, Helps to develop a 'self-driving force', Better decision making, offers a larger sense of responsibility, and Computer literacy. (Al-Shammari, 2007)).

Disadvantages of the Hybrid learning model:

The fact that hybrid learning relies on technologies that are not yet trusted is still ineffective in some parts of the world, especially in rural or remote areas of the internet, Using it effectively requires the student to be well familiar with the use of technology, Adoption of hybrid learning in computer hardware that requires a lot of money, maintenance and setup work, Low level of involvement of curriculum specialists in the manufacture of integrated electronic courses, Focus on cognitive and skill aspects rather than emotional aspects of students, and Feedback, incentives and compensatory incentives are sometimes not available, Low effectiveness of the monitoring, evaluation, correction, attendance and absenteeism system between students. (Al-Ghamdi, 2011).

Types of Hybrid Learning:

There are many different types of hybrid learning models. Which model is best depends on the content being taught and the teacher's expectations for the course. Hybrid learning can come in numerous shapes and sizes and be personalized to fit the individual. These types of models can include:

- 1- Integrating direct (online) and indirect (offline) education.
- 2- Integrate learner-controlled self-paced and direct cooperative learning.
- 3- Mixing planned and unplanned learning.
- 4- Combining the personality material with personalized content or direct live

experiences (in the classroom or online). 5- Including pre-planned training (before starting new job assignments) (Muhammad et al, 2008).

Hybrid learning tools include:

Video conferencing, Learning management systems, online exercises, online discussion forums, and Pre-recorded video instruction. (Al- Heila, 2001, p. 161). The results of the study can provide educators with the requirements needed to engage students towards the successful delivery of a hybrid learning model.

Levels of Hybrid Learning:

Hybrid learning is divided into three levels:

1. Component Level: Links between effective learning and information delivery tools.

2. Integrated level: It combines the many components of Internet-based e-learning.

3. Collaborative level: This level is based on combining the teacher (as a mentor), whether he is a traditional classroom or an electronic teacher via the internet, and between collaborative learning groups in the traditional classroom and collaborative learning groups via the Internet.

4. Comprehensive level: Teaching is combined within the traditional classroom, and also offline electronic learning tools that students can use. (Abul-Majd, et al.,2012) .

The components of the hybrid learning model:

The following are the components of the hybrid learning model, as shown in the previous description: (The computer lab, Internet-based e-learning, Chat for conversation, and synchronous and asynchronous dialogue between the teacher and the students via the Internet, and between the students themselves, Electronic exercises and assessments, (Abo-Barwan, et al., 2016)).

Methods of employing Hybrid learning:

The following are examples of how hybrid learning is used in the educational process:

1. First method: It involves teaching one or more lessons in the course using traditional classroom teaching methods and one or more other lessons using e-learning tools, with students getting evaluated using any of the traditional or electronic assessment methods.

2. Second method: It is based on the mutual participation of classroom education and e-learning in the teaching of a specific lesson, but the beginning is for classroom education first, followed by e-learning, and students are evaluated in the end using any of the regular or electronic evaluation methods.

3. Third method: It is built on the collaboration of the classroom and e-learning in the delivery of a specific lesson. However, e-learning is used to begin education, followed by classroom instruction, and students are then evaluated using any of the traditional or electronic evaluation methods.

4. Fourth method: It is based on the mutual participation of traditional classrooms and e-learning in teaching each lesson, so that the method of e-learning alternative options, and class time is given numerous times for one lesson, and students are evaluated at

the end of the lesson using any of normal or electronic assessment methods. (Zaytoun, 2005).

Creative thinking:

The linguistic definition of creativity is that it arises from the innovation of a thing and that an innovated object has been brought about by innovation, that is, it has been formed from nothing, or it has been created without precedent. For philosophers, creativity is the creation of anything from nothing. Donald Mackinnon, the famous researcher in creativity, believes that it is not possible to define the concept of creativity unless we take a comprehensive account of the aspects or overlapping aspects that make up creativity, and these components are (Creative production, the creative process, the creative person, and Creative Attitude). (AL-Khalili, 2005,p.147).

Characteristics of creative thinking:

It is a mental process aimed at achieving the interest of the individual or the interest of society, It is a process that aims to produce new, different and distinct things that are unique to the creative person, whether they are silver or on the kind. Creative thinking comes from open-ended thinking, but compliance, the ability to solve ordinary problems comes from limited thinking. Creative thinking is one of the ways of human thinking and is not synonymous with intelligence, which includes mental abilities that are added to any thinking, Creative thinking is qualitative thinking, that is, it is linked to areas where there is silver creativity, and photographer creativity, The creative ability is one of the forms of controlled imagination in one of the artistic, literary, or musical fields. And this imagination leads to a kind of achievement in various fields. (Hamadna, 2014, pp. 24-25).

Creativity thinking levels:

Taylor (1959), quoting from Ghanim (2004), divided creativity into five levels, these are (Expressive creativity, Productive creativity, Innovative creativity, Renewal creativity, and Imaginative or extrinsic creativity. (Ghanim, 2004, p.14).

Stages of creative thinking:

The creative thinking process goes through five stages:

The stage of preparation. 2- The nursery stage. 3- The stage of persistence and perseverance. 4- The stage of radiance or inspiration. 5- The investigation stage. (Qitet , 2011, p. 97).

Creative thinking skills:

Most of the researchers in the field of creative thinking agreed that creative thinking includes the following main skills: fluency, flexibility, originality, detail, and sensitivity to problems, which are as follows:

Fluency: fluency includes the quantitative aspect of creative thinking, which means producing a large number of ideas, discovering solutions or finding alternatives to solve a problem, and using the knowledge store at the necessary time. (Hamadna, 2014, p. 31).

The importance of teaching fluency skills:

Teaching this skill helps learners to easily move from long-term memory to ideas related to the topic in question, which facilitates comfortable and quick dealing with problem-solving, decision making and taking in a variety of creative ways. Fluency

skills can be applied in many fields, including research and projects, art paintings, writing stories and novels, using leisure time, and making many decisions related to school assignments or daily life problems. Among the most important steps in applying the fluency skill: defining an appropriate topic, setting the desired goal, recording ideas, allowing the addition of new related ideas, evaluating the effectiveness of the business, and then defining what can be done differently in the following times. (Aziz, 2013, p.p. 87-88).

Flexibility: flexibility is defined as a skill or ability that is used to generate various types of thinking, and it also represents the ability to transfer these patterns and change the direction of thinking and move from normal thinking to response and reaction in a variety of ways.

The importance of teaching flexibility skills:

Carrying out the process of intellectual improvisation when traditional thinking tools are not available, such as: finding a new way to open the door of the house if you do not carry the key, as well as applying flexibility in the method of solving problems to address economic, practical, social and cultural problems. (Aziz, 2013, p.89). Increasing the number of response patterns presented, applying the steps of thinking related to the flexibility skill with judging the effectiveness of this skill. (Aziz, 2013, p.89).

Authenticity: The idea is considered authentic if it is a non-recurring idea, and it is an idea that is not subject to popular ideas and is characterized by distinction. This characteristic depends on the idea of boredom from the use of restrictive solutions and focuses on ideas of value in terms of quality and novelty, which is the uniqueness of the idea. (Qutami, 2005, p. 131).

The importance of teaching the skill of originality:

It helps learners to search for new ideas. If the student understands and can absorb things deeply and authentically, he will reach to produce new original ideas. The result is the identification of critical qualities or characteristics of those ideas. Authenticity differs from the factors of fluency and flexibility in terms of (It depends on the value, quality and novelty of ideas, and this is what distinguishes them from fluency, It is distinguished by winning by repeating what others do, and this is what distinguishes it from flexibility, and Authenticity is an essential element of the creative process, and some thinkers consider it the most important element of the creative process. (Aziz, 2013, p. 90).

Details and placement (clarification): It means the individual's ability to provide new additions that refer to more information for a situation so that the individual can spread the content placing the necessary additions to that content. (Hamadna, 2014, p.33).

The importance of teaching the skill of clarification:

The importance of the clarification skill lies in being an element of creative thinking that enables the learner to improve, develop, reformulate, reorganize, rearrange ideas, or work on embellishing and beautifying them. This skill allows for adding more detailed information and represents part of hyperlinked thinking. This skill is applied in planning parties and when reading fictional stories to give more details about their broad aspects. Among the objectives of teaching this skill (Developing the learners' ability to clarify and detail creative responses, as well as the ability to work on evaluating this skill and applying it properly in the areas of the school curriculum). (Aziz, 2013, p. 90).

Second: Previous studies:

Previous studies about Hybrid Learning Model

Salehi (2012): Introducing Hybrid Learning to investigate it is Effectiveness of Academic Achievement and Reflective Thinking by Ninth Grade Students. This study was done in the Mazandaran, this article aimed to introduce hybrid learning to ninth-grade students to investigate the effectiveness of Academic achievement and reflective thinking in the education process. For the first semester of their senior, the researcher used an experimental design, the sample of the study consisting (of 76) male and female students of ninth-grade students, distributed randomly into two parts of the ninth-grade basic schools belonging to the directorate of the private education of Mazandaran. The first group represents the experimental group, consisting of (37) students, whose students were taught science using a hybrid learning model, and the second one represents the control group, consisting of (39) students, whose students were taught science by using the traditional method. The researcher prepared two tools, academic achievement and reflective thinking tests. The results showed that there was a statistically significant difference at the level of (0.05) between the average degrees of the experimental group and control group in the academic achievement test, in favour of the experimental group, and there was a statistically significant difference at the level of (0.05) between the average degrees of the experimental group and control group in reflective thinking test, in favour of the experimental group.

Stefania (2014): Highlight the role and Characteristics of Hybrid Solutions to potentiate and Enrich Achievement tests to Increase Student Trends in the learning process in the Eighth Grade. This study was done in the united states of America, This

study aims to highlight the role and characteristics of hybrid solutions in the eighth grade to potentiate and enrich achievement tests to increase students' trends in the learning process. For the first semester of their senior, the researcher used an experimental design, the sample of the study consisted (of 38) male students of eighth-grade students, distributed randomly into two parts of the eighth-grade basic schools. The first group represents the experimental group, consisting of (20) students, whose students were taught Arabic language science using a hybrid learning model, and the second one represents the control group, consisting of (18) students, whose students were taught Arabic language science by using the traditional method. The researcher prepared two tools, academic achievement and increase student trends. The results showed that there was a statistically significant difference at the level of (0.05) between the average degrees of the experimental group and control group in the academic achievement test, in favour of the experimental group, and there was a statistically significant difference at the level of (0.05) between the average degrees of the experimental group and control group in trends, in favour of the experimental group.

Previous studies about creative thinking

Khalifa (2010): Impact of a Modified learning Cycle strategy (5Es) on the Achievement and Creative Thinking of Seventh Grade. This study was done in the state of Kuwait, The study aimed to find "the impact of a modified learning cycle strategy (5Es) on the achievement and creative thinking of seventh-grade female science students in the State of Kuwait. For the second semester of their senior, the researcher used an experimental design, the sample of the study consisted (of 48) female students of seventh-grade students, distributed randomly into two parts of the seventh-grade basic schools. The first group represents the experimental group,

consisting of (24) students, whose students were taught science subjects using a modified learning cycle strategy, and the second one represents the control group, consisting of (24) students, whose students were taught science subjects by using the traditional method. The researcher prepared two tools, the achievement test and the Torrance form (A) creative thinking test. The results showed that there was a statistically significant difference at the level of (0.05) between the average degrees of the experimental group and control group in the achievement test, in favour of the experimental group, and there was a statistically significant difference at the level of (0.05) between the average degrees of the experimental group and control group in creative thinking test, in favour of the experimental group.

Mahmud (2015): Knowing the Effect of Using the Frayer Model on Achievement and Development of Creative thinking in science for all fifth graders. This study was done in Iraq, The study aimed For the first semester of their senior, the researcher used an experimental design, the sample of the study consisted (of 73) male and female students of fifth-grade students, distributed randomly into two parts of the fifth-grade primary schools. The first group represents the experimental group, consisting of (36) students, whose students were taught science using the Frayer model, and the second one represents the control group, consisting of (37) students, whose students were taught science by using the traditional method. The researcher prepared two tools, the achievement test and the Torrance form (B) creative thinking test. The results showed that there was a statistically significant difference at the level of (0.05) between the average degrees of the experimental group and control group in the achievement test, in favour of the experimental group, and there was a statistically significant difference at the level of (0.05) between the average

degrees of the experimental group and control group in creative thinking test, in favour of the experimental group.

Aspects of benefiting from previous work:

The researcher benefited from previous studies in the following aspects: (To facilitate the work of the researcher in the selection of resources for the study, Set the search variables, Determination of the population and sample for the current study, to organize the theoretical background of the current study, Formulation of behavioural goals, preparing instructional plans, Make use of the equivalence procedure between the two study groups (control and experiment), Confirmation of the creative thinking test, Identify appropriate statistical tools for the current study, Select the available search tool, Analyzing and interpreting current study results).

Procedures of the Study: The researcher followed the following steps:

First: Experimental Design:

Before beginning any experimental investigation, a suitable experimental design should be chosen to ensure the validity of the hypothesis's results. The choice of experimental design gives the study a significant advantage in terms of ensuring a suitable structure and strategy for controlling the researcher's investigation and obtaining results that can be relied on to answer the study questions. As a result, the researcher has chosen the equivalent group experimental design since it is appropriate for the current study and accomplishes its objectives. This design involves two equivalent groups in several variables. The first is an experimental

class taught using Hybrid Learning, and the second is a control class taught using Traditional Learning.

Table (3.1) represents the experimental design of the study

Groups	Equivalency Variables	Pre-test	Independent variable	Dependent variable (post-test)
Experimental	Chronological age, previous knowledge, IQ test, degree of science in seventh grade, the overall average degree of the previous stage, and academic level of parents.	Creative Thinking	Hybrid Learning Model	Creative thinking
Control			Traditional Method	

Second: community and sample of the study:

The study community was determined by all students of the eighth grade of basic schools in the Kurdistan region of Iraq/ the city of Soran for the academic year (2020-2021), distributed over (194) basic schools. The society of eighth-grade students consisted of (9783) male and female students, of whom (6108) were male

and (3675) females. The eighth-grade students at (Badlian) basic school were randomly selected due to the availability of the requirements to conduct the study and the cooperation of the school administration and a teacher in the implementation of the study experiment. The sample consisted of (53) male and female students, (7) students were excluded, (3) students from the experimental group and (4) students from the control group. Thus, the final number of the two groups reached (44) students, with (23) students for the experimental group and (23) for the control group in the corresponding table (2).

Table (3.2) Distribution of the study sample to the two groups

Class eighth grade of basic education	Division	Groups	Teaching method	The students number according to sexuality	The total number of students before exclusion	The number of students excluded	The total number of students after exclusion
Class	A	Experimental	Hybrid model	Girls=10 Boys=13	26	3	23
Class	B	Control	Traditional method	Girls= 8 Boys=15	27	4	23

Third: Equivalence of the Study groups:

Although the researcher followed the random method in choosing the two Study groups, she was keen to establish equality

between them in some of the variables that she believes may affect the results of the experiment, which are: The degree of achievement for the previous stage in science for all for the seventh grade of basic education, the level of general academic achievement in the seventh grade of basic education, the chronological age is calculated in months, testing the previous information in the subject science for all, IQ, the educational level of the parents, and Creative thinking test. The following is a description of the statistical equivalence in these variables between the Study groups:

Variables	Groups	N	Mean	Std. Deviation	T	P-value
Chronological Age	Experimental	23	176.043	15.334	0.491	0.623
	Control	23	173.913	14.065		
Intelligence Quotient	Experimental	23	17.522	6.584	-0.157	0.875
	Control	23	17.826	6.485		
Previous Knowledge	Experimental	23	13.087	4.368	1.684	0.990
	Control	23	10.609	5.541		

Degree Science for the previous year	Experimental	23	68.087	11.285	0.277	0.785
	Control	23	67.174	11.048		
General Academic Achievement for the previous year	Experimental	23	68.000	10.471	-0.275	0.784
	Control	23	68.783	8.738		
Creative Thinking Fluency	Experimental	23	18.391	2.536	1.650	0.091
	Control	23	16.522	2.906		
Creative Thinking Flexibility	Experimental	23	4.174	0.778	1.697	0.098
	Control	23	3.696	1.105		
Creative Thinking Originality	Experimental	23	20.696	3.866	1.302	0.201
	Control	23	19.304	3.363		
Level academic of parents	Stages	Group		Total	Chi-Square Value	P-Value
		Experimental	Control			

Level Education of Father	Illiterate	5	5	10	0.733	0.865
	Primary	7	7	14		
	High School	5	7	12		
	College	6	4	10		
Total		23	23	46		
Level Education of Mother	Illiterate	8	8	16	0.833	0.842
	Primary	5	3	8		
	High School	5	5	10		
	College	5	7	12		
Total		23	23	46		

The internal and external integrity of her study design was verified as follows:

The internal safety of the design: the internal safety of the design was verified by controlling the following internal factors

(experimental conditions and associated, maturity, test differences in the sample individuals, measurement tools and experimental extinction).

The external safety of the design: to achieve this external safety, the following factors were controlled (the interaction of the influence of the independent variable with test biases, the effect of pre-test, and the effect of experimental procedures, which included the confidentiality of the study, the school building, the study material, and the environment of the class, the distribution of the lessons, the duration of the experiment (time), and the implementation of the experiment.

Fourth: Study requirements:

One of the requirements of the current study is a tool through which the ability of the individuals in the study sample can be measured to achieve the goal of the study and it is a hypothesis. The following requirements have been prepared:

Determining the scientific subject:

The educational material that will be studied during the experiment has been identified from the science book for all, the material for the eighth grade basic for the academic year (2020-2021), edition for the year (2015) for lectures (1,2,3).

Formulation of behavioural goals:

(65) Behavioural goals have been formulated and distributed on three levels of Bloom's classification of the cognitive domain, which are (remembering, understanding, and application). The list of behavioural goals, after preparing the subject of the scientific article, was presented to a group of arbitrators and specialists in

teaching methods, measurement and evaluation, and psychology to know their views on the safety of formulating behavioural goals and the validity of the level of knowledge for it, to verify the extent of their coverage of the scientific subject. (82%) more than the arbitrators' opinions are the criterion for the validity and appropriateness of behavioural goals. In light of their opinions and observations, some modifications were made to formulate several behavioural goals. (Appendix2).

Preparing teaching plans:

Two types of teaching plans were prepared, the first type according to the hybrid model for the experimental group, and the second type according to the usual method for the control group. Samples of these plans were presented to a group of experts and arbitrators in the field of teaching methods, measurement and evaluation, and in light of what the experts showed and after the amendments, the plans became ready for implementation.

Fifth: study tools:

To achieve the study's goal and hypothesis, a tool is needed to track the evolution of creative thinking. The Torrance Scale of Creative Thinking is one of the most famous global creativity measures, if not the most famous at all. This exam has been translated into (34) languages and has been used in thousands of studies throughout the world, including the United States of America. The formal picture has three exercises that the student must complete (completing a picture, completing lines, and completing circles), with a time limit of 30 minutes.

Test validity: the validity of the test was confirmed as follows:

Validity of translation: the test scale of creative thinking of the formal type in the Arabic form translated into Kurdish was taken advantage of by the Arabic teacher (Sabrya Taha) and by the researcher (Khilan Abu Bakr Mahmoud), who conducted her study in Erbil Government in 2015, then translated the Arabic for English form was taken by the teacher (Saadun Salih).

Validity of honesty (face validity): the test was presented to a group of arbitrators (Appendix1), who agreed that the test items were formulated in a way that the students could understand, and the paragraphs obtained the percentage agreement (%82) or more. Valid for application to the study sample.

Test stability: the retest method was used to calculate the test stability. The test for creative thinking was replied to on the date (9/6/2021), two weeks after the eighth-grade students in the school (Shahin Basic for girls) of the soran directorate of education, the number of students are (44) and a correlation coefficient was calculated between the performance of the students in the two applications, and the reliability coefficient was (0.87).

Sixth: Application of the study tools:

After completing the application of the experiment, which listed (12) weeks, the study tool, which is the Torrance test of dimensional creative thinking, was applied in the history of (24/6/2021). به هه له نووسراوة.

Seventh: Statistical Tools:

1: t-test for two independent samples: The researcher used this to equalize the two groups (controller and experimental) and compare the average creative thinking degrees of the two groups.

2: t-test of two related examples: The researcher used this equation to calculate the moral significance between the two applications of the pre-and post-applications of the creative thinking scale .

3: chi-Squar: The researcher used this equation to achieve the equivalence of the parents of the two research groups (control and experimental).

4- Cooper equation: Used to find the ratio of arbitrators' agreement to extract validity of the study tools.

Results of the study: the researcher followed the following results:

First: Presentation of Creative thinking Results:

1-The first main null hypothesis, which states that: There is no statistically significant difference at the significance level (0.05) between the average degrees of creative thinking for the students of the experimental group who studied according to the (Hybrid model), and the degrees of the students of the control group who studied according to the usual method in science for all.

Table (4.1) Independent Sample t-test between two groups (Experimental and Control) for Post- creative thinking test (as a whole)

Group		N	Mean	Std. Deviation	T	P-value
Creative Thinking	Experimental	23	17.362	2.197	4.777	0.001
	Control	23	14.319	2.124		

Table 4.1 shows there is a statistically significant difference between the average degrees of the experimental and control groups in the Achievement for all because its p-value (0.001) is less than a significant level ($\alpha=0.05$), which means, two groups (experimental and control) are not equivalent in the Creative Thinking for all for the eighth grade. The average degree of experimental is higher than the average degree of control as shown in 4.1 which approved the first main hypothesis. Thus, the null hypothesis is rejected and the alternative hypothesis is accepted in favour of the experimental group.

Three sub-hypothesis are derived from this hypothesis:

A-The first sub-null hypothesis: There is no statistically significant difference at the significance level (0.05) between the average degrees of fluency skill for the students of the experimental group who studied according to the (Hybrid model), and the degrees of the students of the control group who studied according to the usual method in science for all.

Table (4.2) Independent Sample t-test between two groups (Experimental and Control) for the fluency skill

Group		N	Mean	Std. Deviation	T	P-value
Fluency	Experimental	23	21.870	3.559	2.587	0.013
	Control	23	19.304	3.154		

Table 4.2 shows there is a statistically significant difference between the average degrees of the experimental and control

groups in the fluency because its p-value (0.013) is less than the significant level ($\alpha=0.05$), which means, the two groups (experimental and control) are not equivalent in the fluency Creative Thinking for all for the eighth grade. The average degree of experimental is higher than the average degree of control as shown in 4.2 which approved the first sub-hypothesis.

B-The second sub-null hypothesis: There is no statistically significant difference at the significance level (0.05) between the average degrees of flexibility skill for the students of the experimental group who studied according to the (Hybrid model), and the degrees of the students of the control group who studied according to the usual method in science for all.

Table (4.3) Independent Sample t-test between two groups (Experimental and Control) for the Flexibility skill

Group		N	Mean	Std. Deviation	T	P-value
Flexibility	Experimental	23	5.696	1.146	3.911	0.001
	Control	23	4.348	1.191		

Table 4.3 shows there is a statistically significant difference between the average degrees of the experimental and control groups in the flexibility because its p-value (0.001) is less than the significant level ($\alpha=0.05$), which means, two groups (experimental and control) are not equivalent in the flexibility Creative Thinking for all for the Eighth grade. The average degree of experimental is higher than the average degree of control as shown in 4.3 which approved the second sub-hypothesis.

C-The third sub-null hypothesis: There is no statistically significant difference at the significance level (0.05) between the average degrees of the originality skill for the students of the experimental group who studied according to the (Hybrid model), and the degrees of the students of the control group who studied according to the usual method in science for all.

Table (4.4) Independent Sample t-test between two groups (Experimental and Control) for the Originality skill

Group		N	Mean	Std. Deviation	T	P-value
Originality	Experimental	23	24.522	3.369	4.913	0.001
	Control	23	19.304	3.819		

Table 4.4 shows there is a statistically significant difference between the average degrees of the experimental and control groups in the originality because its p-value (0.001) is less than the significant level ($\alpha=0.05$), which means, the two groups (experimental and control) are not equivalent in the originality Creative Thinking for all the Eighth grade. The average degree of experimental is higher than the average degree of control as shown in 4.4 which approved the third sub-hypothesis.

2-The second main null hypothesis: There is no statistically significant difference at the level of significance (0.05) between the average degrees of the Creative Thinking Test (pre-post) for the students in the experimental group who were studied according to the Hybrid model according to skills (clarity, flexibility, Originality, test as a whole).

Table (4.5) Paired Sample t-test between the average degrees of students pre and post-in the experimental group for the development of creative thinking.

Group		N	Mean	Std. Deviation	T	P-value
Fluency	Pre	23	18.391	2.536	-5.970	0.001
	Post	23	21.870	3.559		
Flexibility	Pre	23	4.174	0.778	-6.747	0.001
	Post	23	5.696	1.146		
Originality	Pre	23	20.696	3.866	-4.894	0.001
	Post	23	24.522	3.369		
Whole	Pre	23	14.420	2.205	-7.745	0.001
	Post	23	17.362	2.197		

Table 4.5 shows there is a statistically significant difference between the average degrees between pre and post of experimental groups in each of the fluency, flexibility, originality, and whole because their p-values (0.001, 0.001, 0.001, and 0.001) are less than significant level ($\alpha=0.05$) respectively, which means, the average degrees pre and post are changed in the experimental group for each of the fluency, flexibility, originality, and whole separately. The average degrees of post-test is higher than the average degrees of pre-test of the experimental for all of them (fluency, flexibility, originality, and whole) which approved the third main hypothesis. Thus, the null hypothesis is rejected and the alternative hypothesis is accepted in favour of the post-test.

There is also no statistically significant difference at the level of significance (0.05 between the average degrees of the Creative Thinking Test (pre-post) for students in the control group,

according to the usual method according to the skills (clarity, flexibility, originality, test as a whole).

Table (4.6) Paired Sample T Test between the degrees of students pre and post-in the control group for the development of creative thinking.

Control Group		N	Mean	Std.Deviation	t	P-value
Fluency	Pre	23	16.522	2.906	-4.889	0.001
	Post	23	19.304	3.154		
Flexibility	Pre	23	3.696	1.105	-2.251	0.057
	Post	23	4.348	1.191		
Originality	Pre	23	19.304	3.363	0	1
	Post	23	19.304	3.819		
Whole	Pre	23	13.174	2.190	-3.051	0.006
	Post	23	14.319	2.124		

Table 4.6 shows there is a statistically significant difference between the average degrees between the pre and post of the control group for both fluency and whole because their p-values (0.001, and 0.006) are less than significant level ($\alpha=0.05$) respectively, which means, the average degrees pre and post are changed in the control group for either fluency and whole separately. The average degree of post-test is higher than the average degree of pre-test of the control for both of them (fluency and whole) which approved the fourth main hypothesis. Furthermore, there is no statistically significant difference between the average degrees between pre and post of the control group for both flexibility and original because their p-values (0.057, and 1) are higher than the significant level ($\alpha=0.05$) respectively, Thus,

the null hypothesis is rejected and the alternative hypothesis is accepted in favour of the post-test.

Second: Interpreting the results of creative thinking:

The finding shows that the experimental group who studied using the Hybrid model beats the control group in terms of creative thinking. The following are the findings of their study(The effectiveness of Hybrid's model helped in the increase of mental processes, including creative thinking, as a result of teaching three chapters of the science book for all, which is prescribed for eighth grade elementary school because it contains many scientific topics, activities, and experiences that helped students stimulate thinking, The influence of Hybrid's model in improving students' creative thinking in the experimental group, which is attributable to Hybrid's model's effectiveness in teaching, The Hybrid model's variety of activities and difficulties encouraged pupils to be more creative, The Hybrid model improved students' knowledge of the challenges they had created, as well as the diversity of the answers, the flexibility of the inputs, and the uniqueness of their solutions, all of which drove their creative thinking, and Hybrid's model was eager to ask relevant questions and allow adequate time for students to consider the answers and clarify the meaning of each topic, allowing them to learn how to solve any problem they met according to their own.)

Conclusions:

The hybrid model has an effect on the development of thinking in general, and creative thinking in particular, and plays a vital role in the experimental group students' creative thinking and collaborative thinking. The experimental group's learner shows their motivation and enthusiasm for following up on the validation of the hybrid learning model's processes and procedures, as well as renewing the attitude of perseverance and cooperation among them. The hybrid model has a significant impact on the creative thinking of elementary school students in science. Through associated and non-affiliated examples from personal experiences, the hybrid model allows students to play an essential role in the educational process.

Recommendations:

The application of the modern hybrid model in teaching is emphasized, organizing special courses to train science teachers and all teachers in the use of the hybrid learning model in the classroom.

Introducing the theoretical framework and practical procedures for the hybrid learning model into general teaching methods, particularly in science teaching methods in basic education colleges.

The importance of using the hybrid model is because it both generates the correct response and evaluates the incorrect response at the same time, and Encouraging science teachers to focus more emphasis on the development of creative thinking through science instruction, as this helps students develop their personalities in a variety of ways.

Suggestions for future work:

Conducting a study similar to the current study in basic schools using the hybrid model on different educational levels.

The collection of data for everyone is similar to the current study in other fields of science.

Conducting a study on the hybrid model's impact on other factors including the development of scientific or reasoning thinking, and the development of students' attitudes toward science in general.

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راستی رویه شی شماره زایان (Appendix (1): Names of the arbitrators who were used)خشته ی

No	The names of the arbitrators	University-college workplace	Academic degree and specialization	Behavioral objectives	Creative thinking scale	Teaching plans
				1	2	3
1	Prof. Dr. Omer Ibrahim Aziz	Salahaddin University-College of Arts	Professor Educational Psychology	√	√	√
2	Pro. Dr. Hamd Mustafa Belbas	University of Salah al-Din/College of Physical Education and Mathematical Sciences	Professor-General Teaching Methods	√	√	√
3	Assis. Prof. Dr. walid Khalid Baban	University of Salah al-Din /College of Education	Assis. Professor-Measurement and Evaluation	√	√	√

4	Assis. Prof. Dr Kurdistan Hamid Mohammad	Soleimani University- College of Technical	Assistan t Professo r- General Teachin g Method	√	√	√	√
5	Assis. Prof. Dr Pakhshan Jamal Ahmad	Salahal-Din University- College of Education	Assistan t Professo r- General teaching methods	√	√	√	√
6	Assis. Prof. dr. Farhad Ali Mustafa	Salah al-Din University- College of Basic Education of Shaqlawa	Assistan t Professo r- Theoreti cal teaching methods	√	√	√	√
7	Assis. Prof. dr. Sattar Jabbar Haji	University of Zakho- College of	Assis. Professo r-	√	√	√	
8	Assis. L. Mahde Hussien	University of Soran College of Education	Assistan t- Lecture Growth Psychol ogy	√	√	√	
9	Assis. L. Alan Pshtiwan	University of Soran- College	Assistan t	√	√	√	

		of Education	lecture- General Teachin g method			
10	Assis. L. Nihad Muhammad Qadir	University of Soran- College of Education	Assistan t Lector- Social Psychol ogy	√	√	√
11	Mr. Nazil Qadir Ahmed	School of Soran	Assistan t lecture at Girl's Freedom Middle School			√
12	Ms Mhabat Mstafa	School of soran	Teacher At Shahin's Basic School	√		√

Appendix (2): The sample of the behavioural goals

No	Unit one, two, and three. Make students able to:	Behavioural Goal Levels		
		Recall	Understanding	Application
1	Defining bacteria.	*		
2	Show the importance of bacteria for the earth's planet.		*	
3	Define bacteria that cause the disease.	*		
4	Define the Antibiotic.	*		
5	Counting characteristics that discriminating fungi.	*		
6	Draw four phases of binary fission.			*
7	Counting the main shapes of bacteria.	*		
8	Illustrate the great role of bacteria in life.		*	
9	Define Animal.	*		
10	Remember the properties of vertebrates and invertebrates.	*		
11	Define innate behaviour.	*		
12	Name five patterns of behaviour that help animals to survive.	*		
13	Showing the reason that reptiles lay their eggs on land.		*	
14	Shows the function of the diaphragm.		*	
15	Distinct the horse from the		*	

	deer just by looking at its legs.			
16	Draw the life cycle of the frog.			*
17	Count the characteristics of bacteria.	*		
18	Draw euglena algae.			*
19	Define rocks and fossils.	*		
20	Describes how relative dating is used in geology.		*	

Appendix (3): Students' degree of the experimental and control groups in pre-test & post-test on the creative thinking scale

no	Experimental group						Control group					
	Pre-test			Post-test			Pre-test			Post-test		
	Fluency	Flexibility	Originality	Fluency	Flexibility	Originality	Fluency	Flexibility	Originality	Fluency	Flexibility	Originality
1	20	4	24	22	5	27	19	5	23	20	4	21
2	22	4	25	25	7	29	9	1	13	13	3	18
3	23	5	23	21	5	25	17	2	22	20	6	24
4	20	5	25	24	6	27	19	4	21	18	4	20
5	18	3	20	24	3	22	17	4	21	19	3	20
6	17	5	20	23	6	18	16	5	20	23	4	22
7	14	3	13	20	5	21	14	3	18	16	5	15

8	17	5	20	22	7	26	10	2	14	13	2	12
9	20	4	26	20	6	25	18	5	21	17	3	21
10	17	4	19	25	7	28	18	4	16	23	4	18
11	25	5	30	33	7	32	18	3	22	20	5	21
12	16	4	18	21	5	27	16	4	19	24	7	25
13	17	4	15	19	4	26	17	5	25	15	5	23
14	18	5	20	18	6	23	17	4	23	19	5	25
15	16	3	15	17	6	25	19	5	21	22	5	15
16	18	3	17	21	4	21	15	3	16	20	4	12
17	17	3	19	21	3	22	19	3	22	23	5	23
18	20	4	23	24	5	26	17	4	16	21	3	16
19	19	5	22	19	7	20	22	4	20	22	6	22
20	18	5	21	26	7	22	18	5	23	16	5	21
21	18	4	20	22	6	28	16	3	15	20	5	17
22	15	4	20	16	5	21	16	4	18	22	3	16
23	18	5	21	20	5	23	13	3	15	18	4	17

الملخص

هدف البحث الحالي إلي التعرف علي أثر إستخدام إستراتيجية هايبريد في تنمية التفكير الإبداعي في تدريس مادة العلوم لدى طالبات الصف الثامن الأساسي، وللتحقق من هدف البحث تم صياغة فرضيتين، أولاً المقارنة بين المجموعة التجريبية و الضابطة في تنمية التفكير الإبداعي و الثانية حول الاختبارين القبلي و البعدي لمجموعتين التجريبية و الضابطة، واستخدمت الباحثة اختبار (تورانس) الرسمي للتفكير الإبداعي (صورة - ب -) بما يتماشى مع العينة. تكونت عينة البحث من (٤٦) طالبات من الصف الثامن الأساسي في سوران للعام الدراسي (٢٠٢٠-٢٠٢١)، للمجموعتين التجريبية و الضابطة (٢٣) طلبة من المجموعة التجريبية و (٢٣) طالبات من المجموعة الضابطة، حيث تم تدريس مجموعة التجريبية حسب إستراتيجية هايبريد و المجموعة الضابطة حسب الطريقة الاعتيادية، و تم تكافؤ المجموعتين في عدد من المتغيرات و هي (المعلومات السابقة، معدل العام لصف السابع الأساسي، الذكاء، المعلومات السابقة، العمر الزمني المحسوب بالأشهر و اختبار التفكير الإبداعي). كما تم اعداد من مجموعة الخطط التدريسية لمجموعتي البحث (التجريبية و الضابطة) و زود بها خبراء مختصين بهذا المجال، و بعد أنتها التجربة تمت معالجة البيانات إحصائياً بإستخدام برنامج (SPSS)، و دلت النتائج إلي وجود فروق و دلالة إحصائية عند المستوي الدلالة (٠,٠٥) للاختبار التفكير الإبداعي (القبلي- البعدي) لطالبات المجموعة التجريبية و الضابطة التي درسن علي إستراتيجية هايبريد و لصالح الاختبار البعدي، و أيضاً يوجد فرق ذات دلالة إحصائية بين متوسطي الدرجات المجموعة (التجريبية و الضابطة)، لصالح المجموعة التجريبية لدرجات اختبار التفكير الإبداعي البعدي و في ضوء النتائج تم تقديم عدد التوصيات و المقترحات يخدم اغراض البحث الحالي.

