

PalArch's Journal of Archaeology of Egypt / Egyptology

DEVELOPING INTERMEDIATE STAGE FEMALE STUDENTS' CRITICAL THINKING SKILLS AND JURISPRUDENTIAL CURIOSITY: THE EFFECTS OF AUTONOMOUS LEARNING THEORY

Naif Adeeb Al-Otaibi¹, Tahani Maashi Al-Shammari²

Professor, Department of Curriculum and Instruction, College of Education, Imam
Abdulrahman Bin Faisal University, P.O. Box 6121, Dammam, Saudi Arabia.

Department of Curriculum and Instruction, College of Education, Imam Abdulrahman Bin
Faisal University, Dammam, Saudi Arabia.

Email: 1nalotaibi@iau.edu.sa, 2tmalshammri@iau.edu.sa

Naif Adeeb Al-Otaibi, Tahani Maashi Al-Shammari. Developing Intermediate Stage Female Students' Critical Thinking Skills and Jurisprudential Curiosity: The Effects Of Autonomous Learning Theory-- Palarch's Journal Of Archaeology Of Egypt/Egyptology 19(4), 734-759. ISSN 1567-214x

Key Words: The Autonomous Learning Theory, The Critical Thinking Skills, and The Jurisprudential Curiosity.

ABSTRACT

The present study aimed at identifying the effectiveness of the learner independence model in developing third grade intermediate school female students' critical thinking skills and jurisprudential curiosity. The study adopted the quasi-experimental design. The sample of the study consisted of (97) female students randomly selected from the intermediate school female students. The researcher prepared and used the following instruments: (1) A critical thinking skills test, (2) the jurisprudential curiosity Scale. The results of the study revealed the effectiveness of the learner independence model in developing critical thinking skills as a whole and in improving jurisprudential curiosity for the third grade intermediate school female students. The study recommended the need to the critical thinking skills and the jurisprudential curiosity dimensions in the Jurisprudence curriculum. Moreover, there is a need for training the teachers of Islamic education in general, and the teachers of jurisprudence on applying the new strategies on their teaching such as: the learner independence model via holding workshops and seminars for those teachers.

INTRODUCTION

The Islamic Jurisprudence curriculum is considered one of the most important branches of Legitimate science, as well as being a mentor and a guide to the

Muslim in his life, in order to worship and do transactions properly, he must know jurisprudence and its judgments, the principles of good treatment that should be followed in his life, and deals with others.

Teaching Islamic jurisprudence to intermediate school female students requires the use and implementation of rational thinking, which distinguishes a human being from others in this universe, The student's understanding of jurisprudential judgments, and the distinction between evil and good and what is permissible and forbidden requires caring about thinking skills, such as critical thinking skills that enable the students to succeed in their life, and encourage the spirit of inquiry and research according to the evidence without compromising the legislation.

The main function of education is to "learn to think", and the student's ability to think critically through practicing a set of mental processes such as analysis, deduction, evaluation and judgments, which is considered one of the internal factors that affect the learning process (Elekaei, & Tabrizi, 2016).

Critical thinking "is a mental process for constructing a concept, applying it, analyzing it and synthesizing it, and evaluating a lot of gained information from the results, experiences, and reflections that have been observed, all of its processes are used as a base for determining future performance. Or it is a style of thinking that includes effective information culture and management, problem solving and analysis of situations and issues, creativity and discrimination, and the ability to be clear and rational about what needs to be done" (Afriana, Halim & Syukri, 2021; Page & Mukherjee, 2006).

Critical thinking requires curiosity from the student; to contribute in the educational progression, and to keep everything the student has learned longer in her mind and closer to her understanding; this is because curiosity is an internal desire that motivates the student to learn and discover, and to know the mysterious or complex aspects of the academic content.

Many studies confirm that the students who thinks critically is more curious, because they ask more questions, and when they get the answer, they do not accept it easily; they logically analyze the received information, and draw trustworthy deductions that contribute in building knowledge and creative process, enabling them to live and work successfully (Schmidt, 2016; Afsher & Rhimi, 2014).

The students tend to curiosity, which means "high curiosity," learn better, and tend to search for new information and experiences, practicing long life learning. They search for information from their childhood, and with the continuation of the stages of their age development and the accumulation of experiences; they get higher scores in the cognitive skills and intelligence compared to a students who lack curiosity or a tendency to search for information (Raine et al., 2002).

Hein, (2014) showed that there is a relationship between the effectiveness of the teacher and the performance of the learner, and the good education not only

increases the students' achievement scores, but increases their abilities, and enhances their cognitive curiosity; Which is a part of broader concept of the required learning effectiveness for the success of the educational process.

To develop intermediate school female students' critical thinking skills and jurisprudential curiosity, this requires that the Islamic education teachers should direct their attention to use teaching models that make a student-centered learning process. One of the most important recent trends that have been referred to by many educational researchers is the Learner Independence Model "Autonomous Learning Theory" in which the learners is dependent on themselves, and responsible for all the steps of the educational process and dependent on self-development, without being completely dependent on the teacher, this matches with the findings of Sedigh & Tamid: (2016) which concentrated on the necessity to enhance the learner's independence through using different approaches which are modified according to the needs and interests of the learner, and to create a classroom environment that allows them to practice independence in learning. The aim of each teacher is to prepare learners for lifelong learning, As well as what was recommended by the study of Ismail (2016) that concentrated on the necessity for using the learner independence model to develop thinking skills.

The importance of independence in learning for students in the educational stages is determined by the following: Motivation and enthusiasm to learn, take an active and independent approach for learning performance, develop a plan for learning, take responsibility for learning, transfer the independent behavior to all domains, taking decisions about learning objectives, exploiting learning opportunities, and take knowledge and make use of it (Ke, 2016; Salimi & Ansari, 2015; pkoc, 2008).

Independence requires from the students to know the learning strategies they use; by knowing the mechanisms (processes and strategies) used in the learning topics, and knowing the steps or the procedures adopted to find meaning and construct it about these topics to retain them in long-term memory, voluntarily recall them, use or apply them in new situations, and be ready for the learning process (Guo and Li, 2017: 710; Catalan, 2003: 56).

Autonomous Learning Theory does not mean completely dispensing with the teacher. Her presence is very important, as she guides the learning process and helps in its progress; It confirms what has been referred to by (Little, 2006: 2) that "although the concept of the development of the learner's independence refers to the necessity to shift from teacher-centered class to student-centered class, the teacher is still required to play a key role representing in facilitating the learner's performance in an independent way."

In order to ensure the success of the learner's independence, both the teacher and the learner must accept independent learning; the teacher should change his convictions about his role in the educational process from being a source of knowledge and a pillar on which the educational process depends on; to become a guide for the learner who is now the focus of the learning process, the learner

should also accept the idea of being responsible for learning, and practice the skills of the independent learning.

Context of the problem:

Jurisprudence in religion is a light to man's way, as the jurisprudence curricula are related to everything concerns with the Muslim from his life affairs in this world and the hereafter. Therefore, it is taught for all academic stages in the Kingdom of Saudi Arabia. Despite the importance of jurisprudence curricula, the necessity to learn it, and the researchers' interest in the different thinking skills, some studies confirm the low level of the students in critical thinking, such as Al-Zahrani (2016), which indicated the low level of the sample in critical thinking skills. The study attributed the reasons for the low level of critical thinking skills to the teaching the scientific thinking and accompanying activities for male and female students with the same way, as well as the curriculum focus on simple skills such as arranging, and classifying, which does not depend basically on the critical thinking skills. Many studies showed the low level of teachers' critical thinking skills which considered a main reason for the low level of the students such as Al-Tuwaijri (2017), who indicated that the critical thinking skills came to a non-existent level in the teaching performance of teachers of hadith and jurisprudence.

Moreover, the results of some studies conducted on critical thinking such as Zubaidah et al., (2017) showed that the teacher lacks the ability to train the learner to use critical thinking skills, and that there is a low level in critical thinking skills due using the teaching strategies and models that concentrate on the teacher, instead of using strategies and models that concentrate on the learner, and allowing them to actively participate in the learning process, so that make them effective members in the learning group. Many studies have indicated the necessity to develop critical thinking skills using teaching strategies and models that support the learner's active involvement in the learning process such as (Al-Ghadouni, 2021; Fu & Wang, 2021; Ahmad, 2021; Andayani, 2020; Hikmawati et al., 2020; Barra et al., 2019; Zubaidah et al., 2017).

Jurisprudential curiosity was chosen as a dependent variable in this research because of its great importance in improving learning, and the learner's appreciation of his current knowledge. It motivates students to explore knowledge and inspires them to ask questions that help in constructing knowledge, and is considered one of the important motives in high academic achievement and an orientation towards learning by love, searching for information, and giving special attention to the learning content (Hidi and Renninger, 2019; Wade and Kidd, 2019; Jirout et al., 2018) , So many studies have recommended the importance of studying and developing learners' curiosity, and the necessity to integrate the dimensions of curiosity into the content, and train teachers on developing curiosity by using effective methods and strategies (EL-Dweik, 2015). Therefore, many studies emphasized the importance of developing curiosity by using different teaching strategies and models (Kibga et al., 2021; Lindholm, 2018; Baranes & Oudeyer, 2013).

In spite of this importance, it is still far from the focus of attention in previous studies and literature (Ashour, 2003), as well as the presence of some issues that constitute a stumbling block in the way of educational process, such as the “absence of the curiosity dimensions “surprise, incongruity, contradiction, doubt, novelty, and lack of familiarity” in the educational situations, and this can be attributed to the use of the teaching methods that do not develop curiosity and focus on just covering the course.

One of the reasons for the weakness of the third-grade intermediate school female students' critical thinking skills, as well as jurisprudential curiosity is the weakness of teacher's use of the modern teaching strategies and using the traditional teaching methods, which are not commensurate with the requirements of this age, do not meet the learners' needs, and don't help the student to learn how to learn (Felimban, 2014).

Therefore, many studies have recommended the necessity to get out of the conventional way of teaching, and to use the educational models, methods and approaches that suit learners in this age (such as: learner independence model) to promote the learning process, increase the desire for curiosity, develop critical thinking skills, higher-order thinking skills, raises attention, and satisfies the needs (Ismail, 2016; Al-Harthy, 2017; Metwally, 2017; Al- Maqati, 2018). The current research seeks to adopt the learner independence model in legitimate science to develop third grade intermediate school female students' critical thinking skills and jurisprudential curiosity.

Statement of the problem and research questions:

The research problem is determined by the low level of third grade intermediate school female students' critical thinking skills and jurisprudential curiosity, and the problem can be solved by answering the following question:

- What is the effectiveness of the learner independence model in developing intermediate school female students' critical thinking skills and jurisprudential curiosity?

This question branches out into the following questions:

1- What is the effectiveness of the Learner Independence Model in developing intermediate school Female Students' Critical Thinking Skills in the jurisprudence curriculum?

2- What is the effectiveness of the Learner Independence Model in developing intermediate school Female Students' Jurisprudential Curiosity?

3- What is the correlation between critical thinking skills and Jurisprudential Curiosity for third grades intermediate school female students?

HYPOTHESES OF THE RESEARCH

The current research seeks to test the following hypotheses:

- 1- There is no statistically significant difference at the level ($0.05 \geq \alpha$) between mean scores obtained by the students of the experimental group (who studied using the learner independence model) and the control group (who studied conventionally) in the post- performance of the critical thinking skills test.
- 2- There is no statistically significant difference at the level ($0.05 \geq \alpha$) between mean scores obtained by the students of the experimental group (who studied using the learner independence model) and the control group (who studied conventionally) in the post- performance of Jurisprudential Curiosity scale.
- 3- There is no correlation at the level of ($0.05 \geq \alpha$) between the critical thinking skills and Jurisprudential Curiosity for the students of the experimental and control groups, differs according to the teaching process used (the learner independence model - the conventional way).

LITERATURE REVIEW

The research literature deals with the following themes:

First: The Autonomous Learning Theory and its Importance for Intermediate School Students

The term learner's independence appeared for the first time during the burning debate over second language teaching and learning by Henry Holec in a report published by the European Council in the 1979, According to what Hollick mentioned, the independent learning is "the ability that the individual takes responsibility for learning by himself", so the student can identify learning objectives, and determine the content. It also has the ability to choose the appropriate methods of learning, in addition to the ability to monitor the educational process, and evaluate Learning outputs (Holec, 1981). In 1991 learner's independence was defined as "the ability to dissociation, critical reflection, decision-making, and independent performance" (Little, 1991).

Many researchers also indicated that the learner's independence means the desire of the student to be effective and positive, and have the ability to control, and review what has been learned, and the ability to take decisions on choosing of resources, important methods, and the choosing evaluation criteria, which allow them to act independently in their own learning process (Fotiadou et al., 2017).

As for the learner independence model; Ismail (2016) defined it as: "an educational model focused on the learner through developing the skills, the concepts and the positive attitudes towards its cognitive, emotional and social aspects; through five dimensions: guidance, the individual's comprehensive developments, enrichment, seminars, and in-depth studies. It aims to provide the opportunity for the students to become independent learners and self-directed during the learning process."

"The learner independence" model based on the ideas of the Constructivist theory, which believes that knowledge is not gained by relying on the teacher, but through student's thinking and interaction in different learning situations (Ke, 2016).

Many researchers tried to demonstrate the value of independence in learning, and how they can support the student in order to be independent, more willing to learn, increasing self-confidence and self-reliance, As the researchers also pointed out that enhancing independence has its advantage in strengthening the abilities of the student through critical thinking; This is because independence is responsible largely for learning and thinking process, the student cannot develop her knowledge or skills in different fields without engaging independently in different thinking processes during learning (Ku, 2009; Sedighi & Tamid, 2016) .

The main objective of this model is to facilitate learner's development as an independent and self-directed learner, with developing the skills, concepts and positive attitudes within the cognitive, emotional, or affective domains. It is defined as an educational model that links the learner's needs with the learning objectives trying to gain knowledge in different fields of learning (Bazleh & Yarahmadzahi, 2012), or it is an educational model including five main domains, The first dimension: Orientation towards learning: self-discovery, cooperation, leadership, self-efficacy, mental development, and group growth. The second dimension: Individual's growth: meaning the individual's growth in critical and creative thinking skills, problem solving, productivity, and planning. The third dimension: enrichment activities: through the practice of investigation and discovery, cultural activities, and community service. The fourth dimension: Discussions: the use of directed independent learning, group learning, presentation of the topics of knowledge, and small group presentations of the topics. The fifth dimension: deep study: where the learner chooses the topic of learning, and presents it to peers or to the teacher. Individual projects, group projects, mentorship and self-evaluation are encouraged. The following figure shows these dimensions:

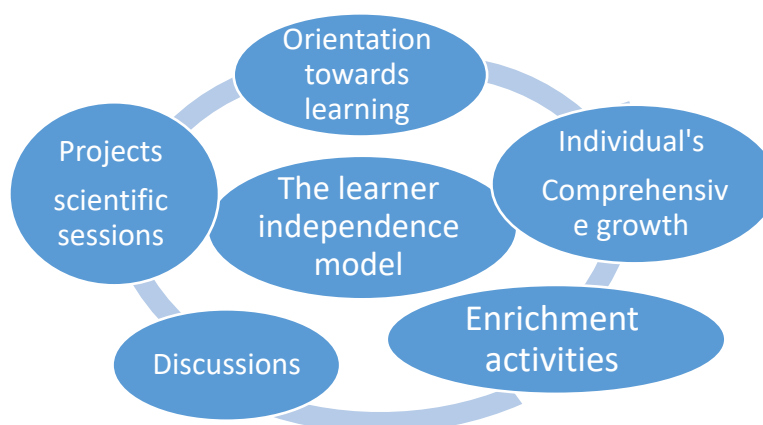


Figure (1) learner independence model dimensions

Second: Critical thinking skills in the jurisprudence curriculum

John Dewey considered critical thinking as reflective thinking, defining it as the process of effective, persistent, and meticulous review of beliefs (Papak, 2017). It was defined as a mental process for constructing the concept, applying it, analyzing it, synthesizing it, and evaluating a lot of information gained from the results, the experiences, and the reflections that have been observed, and use all of its operations as a base for determining future performance” (Page, & Mukherjee, 2006). Or it is “A multi-step process of analyzing, examining and evaluating arguments and discussions or it is a process of carefully defining what a person might say or accept” (Proulx, 2009). Critical thinking skills in the jurisprudence curriculum can be defined as "a set of mental processes employed by the students when studying jurisprudence topics, based on a number of sufficient facts and reasons; to reach jurisprudential judgments, including deduction, interpretation, inference, classification, and evaluation of arguments".

Critical thinking is the basis for science, which requires rationality and logical thinking, and it is also necessary that merging critical thinking into the learning process to be a central objective of education (Lau 2011). Critical thinking makes the students more honest with themselves through knowing their positive and negative abilities, leads the students to a deeper understanding of the cognitive content that have been learned, turning from a negative recipient of the content to a positive learner, develops inquiry and research skills, and develops the ability to learn independently. Critical thinking develops a wide range of thinking skills for the student, such as: the ability to solve problems, accurate comparison, and Classification, organization, discussion, analysis and other skills related to thinking. It is also contributing to the adaptation of the students with their colleagues, evokes a high sense of the community around them, and help them to give priority to mental thinking on the emotional side, making more successful and effectiveness decisions (Al- Heilat, 2013).

Critical thinking revolves around a set of thinking skills, which can be identified in the form of the results of what the students reach after the thinking process. Jarwan (2017) developed a list of most of the critical thinking skills: the distinction between facts that can be substantiated and the allegations of value, the distinction between information, allegations and reasons associated with the subject matter and is not associated with it, determine the level of the novel accuracy, determine the accuracy of the information resources, Know allegations and arguments or ambiguous data, know the assumptions of unauthorized, investigate bias, identify logical fallacies, identify the lack of consistency in the thinking process or deduction, determine the strength of the evidence or the prosecution, take decision on the subject, constructing a base for practicing, and predicting the results and solutions.

Ennis (2013) identified critical thinking skills in: clarification skill: it includes focusing on the main questions, asking and answering questions, analyzing arguments and discussions, and understanding diagrams and figures. Decision-making skill: It includes judging the credibility of the information resource, monitoring and judging reports, and using prior knowledge, whether derived

from previous readings or through previous situations and events, and using of previous deduction. and inference skill: It includes deducing judgments, constructing and judging inductive inferences and arguments, constructing arguments for the best interpretations, and making valuable judgments, and advanced clarification skill: it includes identifying terminologies, judging on the definitions, dealing with ambiguity appropriately, judging unconfirmed assumptions, thinking hypothetically, and dealing with false assumptions.

Critical thinking skills can be classified to teach jurisprudence for intermediate stage students as the following: deduction: It is the ability to reach a certain jurisprudential deduction based on jurisprudential information obtained in advance, or "the ability to extract results from the introductions". Interpretation: It is the ability to distinguish between the meanings that are found in the evidences, identify the interpretations, and to decide whether these meanings and results are based on specific accepted information or not?, inference: It is the ability to provide evidence from the holy Quran, the Sunnah, diligence, or analogy on jurisprudential situations, issues, or rules in order to reach a jurisprudential judgment, and to judge the significance of the given jurisprudential information, classification: It is represented in the collection of jurisprudential information based on its participation in certain characteristics, and evaluation of arguments: It is represented in the ability to judge on the given jurisprudential issues, and to distinguish between strong and weak arguments.

Third: jurisprudential curiosity:

The concept of curiosity dates back to the 1950s. Berlyne (1954; 1978) defined it as "a state of discomfort, due to the insufficiency of information that motivates a certain exploration," thus curiosity equated with exploration. There were many definitions of curiosity. Some researchers defined it as awareness, appreciation, striving and a strong desire from the students to explore new events, focus on new and obscure themes in learning, and the motivation to participate with others (Kashdan & Silvia, 2009; Hein, 2014; Rinkevich, 2014), Hence, it represents the motivation to obtain more information, and the desire to search for knowledge that enables the individual to solve ambiguities, analyze phenomena and examine everything new, with the aim of reaching balance and stability." In the light of the previous definitions, jurisprudential curiosity can be defined as: "The students' tendency to search and study, gathering jurisprudential information, and investigating facts and situations characterized by novelty, sudden, conflict, "incompatibility," or complexity in the jurisprudence curriculum.

The jurisprudence curriculum is one of the curiosity-stimulating approaches; it contains devotional activities related to all aspects of student's life, such as purity, prayer, fasting, zakat, pilgrimage, social life organizations, and legal judgments that clarify the limits of the permissible and the forbidden, so jurisprudential curiosity motivate student to research and reflect on the sources of legislation from the Quran and Sunnah and the diligence and analogy; to arrive at the legal judgments that organize life, to know the causes and goals for which these judgments were enacted, and to distinguish between strong and weak jurisprudential opinions.

Curiosity makes the students more engaged in the learning process with better response, motivates them to explore knowledge and search for answers to all the unknown questions, and also contributes to spontaneous learning. Schmidt (2016) confirmed that curiosity motivates the students to explore the knowledge and inspired them to ask questions that are involved in constructing knowledge. Cognitive curiosity provoking is achieved through deliberate and intentional questions, which make the students have a high level of enthusiastic and participation in the learning process.

Osroff, (2016) confirms the importance of curiosity in learning by mentioned that curiosity is an essential part of human consciousness, and a feature that makes the behavior effective. When the student is curious; the learning process turns from being a routine boredom process to be an adventure to explore the surrounding world that's because the extrinsic motives tend to have a short-term effect on the student, while the intrinsic motives, which stem from real curiosity are the long-term effect of the student.

According to Berlin's theory, 1965, scientific curiosity is divided into two main types: it is related to sensory, visual and auditory stimuli, which are used to obtain information about complex or non-specific objects, such as visual searches 1-Perceptual curiosity: with an active state of curiosity. 2- Cognitive curiosity: It deals with knowledge or the need for knowledge, by examining questions and proposals in order to obtain correct information about a subject. Olson and Camp in 1984 believed that there are two types of curiosity: General curiosity, which is a mixture of curiosity as a feature and a state of the student, and the curiosity that motivate the student to Search for experiences or sensory search, and both types can lead to a deep level of learning by providing motives that motivate the student to increase her own knowledge, and these motives can be internal or external. (Koranda & Sheehan, 2014)

Many studies agree on the basic dimensions of scientific curiosity, such as El-Shaarawy (1997), Hussein (2015), and the study of Kafrouni (2016), and these are dimensions: Novelty: The topics presented to the student are new, or presented in an unfamiliar way; because the student's response weakens and decreases to repetitive topics. What confirms that is what was indicated by (Berlyne, 1954) about the importance of the novelty in motivating curiosity. According to Berlyne novelty represents a strong motivation in attracting the attention of the individuals, and as a determinant factor for reconnaissance behavior. Complexity: the more complex the subject has, the greater the chances of gathering information about it, the more the student's attention increases, and the less chances of depending on it decreases (Ismail, 2003). The conflict "incompatibility": the elements of the topic presented to the student are contradictory and inconsistent, which motivates the student to search for information to resolve this conflict. The sudden: The elements of the subject presented to the student are unexpected, and the responses to sudden situations in certain issues.

From the previous data, the dimensions of jurisprudential curiosity can be determined as follows: Novelty: It is the presentation of jurisprudential issues

and topics in a unique way. Complexity: It is the presentation of jurisprudential issues and topics with various components and dimensions. Conflict (Incompatibility): It is the inconsistency of the constituent parts of the stimulus, the subject or the jurisprudential issue, and sudden: It is the presentation of unexpected events from the stimulus, or the presentation of unexpected situations in the jurisprudential subject.

RESEARCH METHODOLOGY AND PROCEDURES

The research aimed to reveal the effectiveness of the learner independence model in developing critical thinking skills and jurisprudential curiosity. To achieve the previous goal, the researcher used the following procedures:

First: research methodology:

A quasi-experimental design was used to measure the effectiveness of the independent variable (the Learner Independence Model) on the dependent variables (critical thinking skills and Jurisprudential Curiosity). The research was based on the design two groups: the experimental group which studied using the learner independence model) and the control group which studied conventionally) In addition, each of the "critical thinking skills test, and the jurisprudential curiosity scale" were applied before and after the application on the two groups.

Second: The research community and its sample:

The research community includes all regular third grade intermediate school female students in public schools at (EL-khobr) for the academic year (2017 / 2018) at the first semester, and their number was (2641) students from 25 schools according to the statistical Manual of the Department of Education Office (EL-khobr). The research sample consisted of third grade intermediate school female students, and their number was (103) students were selected randomly into two groups: the experimental group from the fifth intermediate school for girls in (Dhahran), and their number was (50 students), the control group was from the first intermediate school for girls in (Al-Rakah), and the number of them was (53) students.

Third: Research instruments and experimental treatment materials.

A - A test to measure critical thinking skills in the jurisprudence curriculum:

The objective of this test is to measure third grade intermediate school female students 'critical thinking skills at (food and beverages) unit in the jurisprudence curriculum. The test was consisted of (30) questions divided into (6) questions for each skill of critical thinking "deduction, interpretation, inference, classification, evaluation of arguments". The test was applied on (60) female students from third grade intermediate school as a pilot study, to determine the test duration, which took (38) minutes. The reliability of the test was calculated using the split-half reliability, which equal (0.70), and it was corrected by using the Spearman-Brown equation; the reliability coefficient was (0.83), which indicated a high and acceptable reliability coefficient. the internal consistency

validity was calculated by using the correlation coefficient between the scores of each single item of the critical thinking skills test that belongs to it. The correlation coefficient between each skill to the total score was also calculated, this reveals that all the correlation were statistically significant at level (0.01), This confirms that the test has a high degree of internal consistency.

B. Jurisprudential Curiosity Scale:

The scale of jurisprudential curiosity was designed for third-grade intermediate female students in the jurisprudence curriculum, and it consisted of four dimensions: novelty, complexity, conflict "incompatibility", and sudden, (39) statements divided into positive and negative phrases are formulated according to the pentagonal Likert scale "strongly agree, agree, neutral, disagree, strongly disagree" with the degree "5, 4, 3, 2, 1" respectively for each statement if the statement has a positive direction towards the statement you measure, and the degree is "1, 2, 3, 4, 5" respectively for each statement if the statement has a positive direction towards the statement you measure, The scale was applied on (60) female students from third grade intermediate school as a pilot study. The reliability of the test was calculated using the alpha-Cronbach's method which equal (0.76), it indicated a high and acceptable reliability coefficient. The validity of the scale was measured using the internal consistency by calculating the correlation coefficient between the scores of each single item of the scale with the dimension to which it belongs to, and the correlation coefficient between the score of every dimension of jurisprudential curiosity to the other dimensions, as well as every dimension with the total degrees, The correlation coefficients were all significant at the levels of (0.05) and (0.01), This indicates that the scale has a high degree of internal consistency. The time of applying the scale was (17) minutes.

C. A teacher's guide for teaching by using the learner independence model.

It is the teaching materials including the lessons of two units at the jurisprudence curriculum for third grade intermediate school female students, the (food and beverages) unit, which consisting of five lesson" the food blessing, the judgments relating to foods and beverages, the origin in foods and beverages, types of foods and the most important of its judgments, and the forbidden Foods", and the (compulsion and medication) unit which consisting of two lessons: " judgment on having to eat forbidden food, having to take other's food, the legality of medication and its control, medication by blood transfusion, and the judgment of using drugs in medication". A number of activities and exercises were prepared according to the dimensions and stages of the learner independence model which are orientation towards learning , individual's growth, enrichment activities, discussions, and scientific sessions (projects) with the aim of developing third grade intermediate school female students' critical thinking skills and Jurisprudential Curiosity.

FOURTH: CARRYING OUT THE RESEARCH EXPERIMENT:

To carry out the search experiment, the following steps were followed:

1- Pre-performance of the critical thinking skills test and the Jurisprudential Curiosity Scale:

The critical thinking skills test and the jurisprudential curiosity scale were administered to the experimental and the control groups as a pre-performance to check the equivalence of the two groups before starting the experiment. "t" value was calculated to indicate the differences between mean scores of the experimental and control groups. Table (1) shows the results.

Table (1) “t” Value for the Difference between the Mean Scores Obtained By the Students of the Experimental and the Control Groups in the Pre-Performance of the Critical Thinking Skills Test, and the Jurisprudential Curiosity Scale

Variable	Groups	N.	Mean	St. deviation	D.f.	t-value	Significance
Critical thinking skills	Experimental	48	54.15	10.71	95	0.71	Not significant at 0.05
	Control	49	55.55	8.56			
jurisprudential curiosity scale	Experimental	48	108.83	11.10	95	0.36	Not significant at 0.05

It is clear from Table (1) that “t” values are not significant in the critical thinking test and the jurisprudential curiosity scale; which indicates that there is no statistically significant difference between mean scores obtained by the students of the experimental and the control groups in the pre- performance of the critical thinking test, and the jurisprudential curiosity scale, and thus the equivalence of the two groups was achieved before starting the experiment

2- Teaching the two research groups:

The main objective of applying the experiment is to obtain data about the results of the groups, and help in accepting or rejecting the research hypotheses, and then the application of the experiment began (teaching the experimental group using the learner independence model) in the first semester on Wednesday, 9/9/2018, and ended on 11/11/2018 (eight weeks=16 lessons).

3- Post testing of the research instruments

After teaching the experimental and the control groups, the critical thinking test and jurisprudential curiosity scale were applied, and then data was organized and statistically processed.

RESEARCH RESULTS AND DISCUSSION:

The Following is the research results and discussion in the light of the research problem and its hypotheses:

First: The effectiveness of the learner independence model in developing critical thinking skills for third-grade intermediate school female students in Jurisprudence curriculum:

The first hypothesis “ There is no statistically significant difference at the level ($0.05 \geq \alpha$) between mean scores obtained by the students of the experimental group (who studied using the learner independence model) and the control group (who studied conventionally) in the post- performance of the critical thinking skills test for third-grade intermediate school students in Jurisprudence curriculum” was tested by using the t-test for the two independent groups to identify the differences between the experimental and control groups in the post-performance of the critical thinking skills as a whole and its Subskills (Deduction, interpretation, inference, classification, and evaluation of arguments), the following table shows the result.

Table (2) t-value for the differences between mean scores obtained by the experimental and control groups in the post-performance of the critical thinking skills as a whole test and its subskills (Deduction, interpretation, inference, classification, and evaluation of arguments)

Critical thinking skills	Groups	N.	Mean	St. deviation	D.f.	t-value	Significance level
Deduction	Experimental	48	14.13	2.93	95	4.35	Significant at (0.05)
	Control	49	11.76	2.42			
Interpretation	Experimental	48	15.40	2.45	95	7.16	Significant at (0.05)
	Control	49	11.86	2.42			
Inference	Experimental	48	14.31	2.84	95	5.24	Significant at (0.05)
	Control	49	11.33	2.77			
Classification	Experimental	48	22.77	1.82	95	5.99	Significant at (0.05)
	Control	49	19.49	3.34			
evaluation of arguments	Experimental	48	15.33	2.68	95	4.93	Significant at (0.05)
	Control	49	12.04	3.79			
Critical thinking skills as whole	Experimental	48	82.0	8.55	95	8.37	Significant at (0.05)
	Control	49	66.16	10.05			

From the above table it is obvious that “t” values are statistically significant at the level of (0.05). This indicates that there were significant statistical differences between mean scores obtained by the experimental and the control groups in the in the post- performance of Critical thinking skills test as a whole degree and between skill (deduction, interpretation, inference, classification, and evaluation of arguments) favoring the experimental group. ETA square (η^2) and (d) value were calculated to show the effect size of the independent variable (learner independence model)) (Rushdy Pham, 1997: 65), the following table illustrates this:

Table (3): (t) value, and (η^2) for the effect size of (learner independence model)) in the critical thinking skills test as a whole and its Subskills (deduction, interpretation, inference, classification, and evaluation of arguments)

Independent variable	Critical thinking skills	t- test	D. f.	Eta square η^2	Effect size “d” value	Effect size amount
The learner independence model	Deduction	4.35	95	0.17	0.90	High ^{1*}
	Interpretation	7.16	95	0.35	1.46	High
	Inference	5.24	95	0.22	1.22	High
	Classification	5.99	95	0.27	1.24	High
	evaluation of arguments	4.93	95	0.20	1.11	High
	Critical thinking skills test as whole	8.37	95	0.24	1.71	High

From the above table it is obvious that the effect size using the learner independence model in critical thinking skills test as whole was high as the effect size was "1.71" (high effect of the model), the effect size of each skill as the following: deduction skill "0.90", interpretation skill "1:46", inference skill "1.22", classification skill "1.24", and evaluation of arguments skill "1.11". These results generally refer to the effectiveness of the model in developing critical thinking skills, this result agrees with other studies such as:

- Studies have proved the effectiveness of the (learner independence model)) in developing other variables in different subjects such as Ismail (2016) in developing self-regulation dimensions and coexistence values ,(Bazleh & Yarahmadzahi, 2012) in developing students’ readiness of self-learning and English proficiency.

- Studies have reinforced the importance of using modern models and strategies that support the learner's active engagement in the learning process and developing critical thinking skills (Al-Ghadouni, 2021; Fu & Wang, 2021; Ahmad, 2021; Andayani, 2020; Hikmawati, Suastra, & Pujani, 2020; Barra, Wilujeng, & Kuswanto, 2019; Zubaidah, Fuad, Mahanal, & Suarsini, 2017). This result is consistent with what was mentioned in the theoretical framework, that there is a correlation between the learner independence model and critical thinking skills, so that the model enhances third grade intermediate school female students independence learning through group activities, discussions and projects that help them to interact with the jurisprudence curriculum taking into consideration their abilities. The model also allows students to plan for learning, monitor the progress of the educational process, and then evaluate themselves and their colleagues.

From the result obtained, the null hypothesis cannot be accepted and should be modified to be as the following: “There is a statistically significant difference

¹(*) greater than (0.08)((Rushdy Pham, 1997: 65)

at the level ($0.05 \geq \alpha$) between mean scores obtained by the students of the experimental group (who studied using the learner independence model) and the control group (who studied conventionally) in the post- performance of the Critical thinking skills favoring the experimental group”.

The previous result is explained as the following:

- The learner independence model offers a set of activities and exercises that encourage students’ thinking, and encourage them to practice many mental processes such as: deduction, interpretation, inference, classification and judgment, through their five dimensions "orientation toward learning, individual’s growth, enrichment activities, discussions, Scientific sessions (Projects)".
- Repeat a set of enrichment activities that motivate students to use their minds through the following: deducting the jurisprudence term, and jurisprudence judgments from the proper Legitimate evidences and then interpret, and classify the jurisprudence examples affiliated and non-affiliated to the presented Jurisprudence expressions, and determine the Legitimate evidences associated and non-associated with the jurisprudence issue, and judging the strength or weakness of some jurisprudence arguments.
- Informing the students with the critical thinking skills that are needed to be developed through the jurisprudence curriculum, to be their interest.
- The discussions that the students practice in their groups helped in increasing their self-confidence, which help them manage the discussion about their previous knowledge. the new issues and terms of jurisprudence have arisen from them.
- The enrichment activities helped the students to think critically, reflect on the presented jurisprudential issues, and search for new sources for the jurisprudential subject.
- The learner independence model with its five dimensions helped in investigating students’ energies and mental skills, through giving them the responsibility of learning, including: identifying clearly the of learning objectives, review the learning processes according to the existing and the required knowledge, and then judge the level of achieving the goals.
- The model evokes students’ research and discovery skill, and trying to understand, deduce and explain obscure jurisprudential topics.
- Connecting jurisprudential topics to the students’ real life and their problems helped to increase their interest in these topics through research and investigation; to find appropriate solutions to some of the studied jurisprudential problems and issues.

- Presenting realistic situations related to the studied jurisprudence issue that led to developing students' thinking by understanding these situations and explaining them, deducing errors, and then evaluating them.
- The learner independence model is based on the process of exchanging ideas and information between the students, and the understanding of the presented jurisprudence issues through discussions, projects and enrichment sources. Thus the ability to apply the jurisprudential judgment that they have learned in other life situations have been developed.
- Using the learner independence model helped the students to understand jurisprudential topics in a better way, by giving them real examples, videos, and pictures which make them think in order to deduct, classify, interpret or evaluate the jurisprudential judgments, and then infer that.
- The learner independence model does not provide the information to the students directly, but guided them through a variety of activities to get the information themselves through research and discovery; this leads them to have a continuously better learning inside and outside the school.
- The learner independence model focus on projects and scientific sessions that enhance the students' ability to choose the appropriate jurisprudential project, distribution tasks, judging on the presented projects from their peers, and determine the success of the project, and then evaluate them.
- The learner independence model develops the students' ability to inference, by presenting jurisprudential phrases or judgments and then linking them to the evidence.
- The model focused on the activities that help in transferring the jurisprudential information given from the classroom to the external environment, through projects and scientific sessions, which help the student to transfer the learning effect.

Second: The effectiveness of the learner independence model in developing jurisprudential Curiosity among third- grade intermediate school female students:

The second hypothesis “ There is no statistically significant difference at the level ($0.05 \geq \alpha$) between mean scores obtained by the students of the experimental group (who studied using the learner independence model) and the control group (who studied conventionally) in the post- performance of Jurisprudential Curiosity scale” was test by using the t-test for the two independent groups to identify the differences between the experimental and the control groups in the post- performance of the Jurisprudential Curiosity scale as a whole and its dimensions (novelty, complexity, conflict “incompatibility”, and sudden), the following table shows the result.

From the above table it is obvious that “t” values are statistically significant at the level of (0.05). This indicates that there were significant statistical differences between mean scores obtained by the experimental and the control groups in the in the post- performance of Jurisprudential curiosity scale a whole values and between its different dimensions (novelty, complexity, conflict “incompatibility”, and sudden) favoring the experimental group. ETA square (η^2) and (d) value were calculated to show the effect size of the independent variable (learner independence model), the following table illustrates this:

Table: (4) t-value for the differences between mean scores obtained by the experimental and the control groups in the post-performance of the Jurisprudential Curiosity scale as a whole and its dimensions (novelty, complexity, conflict “incompatibility”, and sudden)

Dimensions of Jurisprudential Curiosity	Groups	N.	Mean	St. deviation	D.F	t-value	Significance level
Novelty	Experimental	48	32.25	4.49	95	4.12	Significant at (0.05)
	Control	49	29.06	3.21			
Complexity	Experimental	48	31.73	4.95	95	5.08	Significant at (0.05)
	Control	49	27.06	4.06			
conflict “incompatibility”	Experimental	48	31.75	5.60	95	5.17	Significant at (0.05)
	control	49	26.96	3.23			
Sudden	Experimental	48	32.69	4.19	95	6.18	Significant at (0.05)
	Control	49	28.08	3.56			
Jurisprudential Curiosity as whole	Experimental	48	127.79	14.82	95	6.58	Significant at (0.05)

Table (5): (t) value, and (η^2) for the effect size of (the learner independence model) in the Jurisprudential curiosity scale and its dimensions (novelty, complexity, conflict “incompatibility”, and sudden)

Independent variable	Jurisprudential curiosity scale	t- test	D. f	Eta square η^2	Effect size “d” value	Effect size amount
The learner independence model	Novelty	4.12	95	0.15	0.86	high ^{2*}
	Complexity	5.08	95	0.21	1.03	high
	conflict “incompatibility”	5.17	95	0.22	1.21	high
	Sudden	6.18	95	0.29	1.28	high
	Jurisprudential curiosity as whole	6.58	95	0.31	1.34	high

From the above table it is obvious that the effect size of using the learner independence model in the Jurisprudential curiosity scale as whole and its

²(*) greater than (0.08) (Rushdy Pham, 1997: 65)

dimensions was 1.34 (high effect of the model), the effect size of each dimension as the following: novelty “0.68”, complexity 1.03, conflict “incompatibility” 1.21, and sudden “1.28”. These results generally refer to the effectiveness of the model in developing Jurisprudential curiosity, this result agrees with other studies such as:

- Studies have proved the effectiveness of the (learner independence model) in developing other variables in different subjects such as Ismail (2016) in developing self-regulation dimensions and coexistence values ,(Bazleh & Yarahmadzahi, 2012) in developing students' readiness of self-learning and English proficiency.
- Studies have been investigated to develop a scientific curiosity by using modern models and strategies such as: Ashour (2003), Hussein (2015), and the study of El-Dweik (2015), Baranes & Oudeyer (2013), study Lindholm (2018), and Kibga, Gakuba, and Sentongo (2021).

This result is consistent with what was mentioned in the theoretical framework, that there is a correlation between the learner independence model and Jurisprudential curiosity such as Zhao et al (2011). So that the learner independence model develop the students' internal motivation to learn and discover, and enhances their abilities to search for jurisprudential information; to know the complex aspects of Jurisprudential issues, and have the ability to understand and solve them.

From the result obtained, the second hypothesis cannot be accepted and should be modified to be as the following: “There is a statistically significant difference at the level ($0.05 \geq \alpha$) between mean scores obtained by the students of the experimental group (who studied using the learner independence model) and the control group (who studied conventionally) in the post- performance of the Jurisprudential curiosity favoring the experimental group”.

This result can be explained as the following:

- The learner independence model focuses on arousing third-grade intermediate school female students' motivation towards curiosity through developing its four dimensions; to be able to deal with the Jurisprudential situations that are novelty and sudden, and jurisprudence issues that are complex and conflicting. It enables them to search for Jurisprudential information, and practices thinking processes independently by identifying their needs for education and then work to satisfy them.
- The learner independence model is based on the principle of increasing students' independence at this stage of learning, which helps in developing their jurisprudential curiosity, motivates them to discover the jurisprudence questions, and then search for the correct answers through proper legitimate evidence.
- The components of the learner independence model are thinking and reflection, which motivate the students to construct new learning strategies, then

develop them, and also develops students' jurisprudential curiosity to help them access to the required jurisprudential knowledge.

- The learner independence model allows students to interact positively with the new and vague elements of the environment by introducing jurisprudential conflicting or complex issues associated with students' real life such as contemporary jurisprudence; to be able to understand it and find appropriate solutions.
- The learner independence model provides the students with a set of enrichment activities and resources that enhance their ability to search and discover; in order to achieve, understand and be aware of the of new, complex or conflicting jurisprudential issue dimensions.
- The learner's independence model trains students to learn and practice how to think independently, making them able to perform properly with the jurisprudential situations that happened suddenly.
- The learner independence model offers a range of jurisprudential issues such as: cosmetic operations, and directs the students to evaluate themselves, making them able to discover any new jurisprudential issue and evaluate them.
- The learner's independence model links the jurisprudential content to the students' real life, which helps in developing jurisprudential curiosity.
- The learner independence model focuses on developing the dimensions of jurisprudential curiosity by presenting new or conflicting jurisprudential issues, which evoke the students and lead them to find appropriate solutions, and then to carry out projects and scientific sessions in order to transfer the correct Jurisprudential knowledge that they had learned to the outside community.

Third: The nature of the correlation between the critical thinking skills and jurisprudential curiosity for third-grade intermediate school female students: The third hypothesis "There is no correlation at the level of $(0.05 \geq \alpha)$ between the critical thinking skills and Jurisprudential Curiosity for the third-grade intermediate school female students, differs according to the teaching process used (the learner independence model - the conventional way) was tested through calculating the correlation between the scores of the students in the experimental and control groups in the critical thinking test and Jurisprudential Curiosity scale. Table (6) shows the result.

Table: (6) Correlation coefficients between the scores of the students of the experimental and control groups in the critical thinking test and Jurisprudential Curiosity scale

Variables	Group	Number	Correlation coefficient	Significance level
Critical thinking	Experimental group	48	0.56	significant at 0.05

Jurisprudential curiosity	Control group	49	0.18	significant at 0.05
---------------------------	---------------	----	------	---------------------

From the above table it could be said that there was a statistically positive correlation at the significant level (0.05) between the scores of critical thinking skills test and the Jurisprudential Curiosity scale among the participants of the experimental group which studied using the learner independence model. The correlation coefficient was (0.56) which is in the medium level, this result is agree with other studied done by (Afshar & Rahimi: 2014) which showed that student who think critically have more curiosity, El-Sharif (2011) which proved that there was correlation between curiosity and creative thinking as a kind of thinking, and Ahmed (2012) which showed that the training in curiosity contributes in developing preparatory stage students' attention, visual perception and critical thinking.

There was also a positive correlation between these variables in the control group students who studied using the conventional method of teaching, but it is not statistically significance as the correlation coefficient between them was (0.18).

From the result obtained, the third hypothesis cannot be accepted and should be modified to be as the following: "There is a positive statistically significant correlation at the significant level (0.05) between critical thinking skills and Jurisprudential Curiosity among the students of the experimental group who were studied using the learner independence model."

The previous result can be explained as the following:

- Creating the learner independence model to develop students' Jurisprudential Curiosity; to form a strong internal motivation to learn Jurisprudential topics, and to practice critical thinking skills, such as deducing jurisprudence judgments from their legal evidence.
- Presenting activities that include new, complex, conflicting, and sudden jurisprudential issues "Dimensions of curiosity", this prompted the students at this stage to use critical thinking; to solve these Jurisprudential issues.
- Jurisprudential Curiosity represents an internal desire to motivate students to practice different critical thinking skills, such as: "deduction of terms and jurisprudence judgments, inference by the correct legitimacy evidence, classification of affiliated and non-affiliated Jurisprudential issues, and evaluates the Jurisprudential arguments."
- Developing students' critical thinking at this stage makes them more Jurisprudential Curiosity, and raises more questions; In order to find solutions and answers to new, complex and sudden Jurisprudential situations.
- The learner independence model used a set of new and complex Jurisprudential situations and problems, which require deep thinking from the students.

CONCLUSIONS AND RECOMMENDATIONS:

In light of the search results, the researchers can provide a number of recommendations that may contribute to enrich of the educational field, including: 1-the necessity for the curriculum planners to benefit from the autonomous learning theory, and develop jurisprudence curricula for intermediate school female students. 2- Critical thinking skills and dimensions of jurisprudential curiosity should be included in the jurisprudence curriculum and encouraging practicing these skills and dimensions through enrichment activities that the learner independence model enhances using them. 3- Training teachers and supervisors of Islamic education in general, especially jurisprudence on modern strategies such as the learner independence model, which evokes critical thinking skills and jurisprudential curiosity through workshops; to train them on the learner independence model.

The current research also presents suggestions for further researches in the field of jurisprudence learning and teaching, such as the effectiveness of the autonomous learning theory “learner independence model” in developing critical, creative, and visual thinking skills when teaching different Islamic education curricula, and evaluating the jurisprudence curriculum for all stages of general education in the light of the dimensions of jurisprudential curiosity and critical thinking skills.

REFERENCES

- Afriana, N., Halim, A., & Syukri, M. (2021). Analysis of the Characteristics of Students' Critical Thinking Skills in Completing National Exam Questions. *Jurnal Penelitian Pendidikan IPA*, 7(2), 196-201. doi: <https://doi.org/10.29303/jppipa.v7i2.627>
- Afshar, SH; Rahimi, A, & Rahimi, M. (2014). Instrumental motivation, critical thinking, autonomy and academic achievement of Iranian EFL learners. *Issues in Educational Research*, 24(3),281-298.
- Ahmad, D. (2021). Analysis of SAVI Learning Model with the Task of Observation of Video on Science Learning in Producing Analytical Thinking and Critical Thinking Abilities. *Jurnal Penelitian Pendidikan IPA*, 7(1), 121-128. doi: <https://doi.org/10.29303/jppipa.v7i1.543>.
- Ahmed, A. A. (2012). The effect of a program based on curiosity in developing some cognitive processes and thinking skills for preparatory school female students.(unpublished Master’s thesis) Cairo University, Egypt.
- Al-Ghadouni, A. (2021). Critical Thinking: Components, Skills, and Strategies. *Revista Argentina de Clínica Psicológica*, XXX (2), 1-6. DOI: 10.24205/03276716.2020.4000
- Al-Harthy, R. M. (2017). The effect of using the differentiated teaching strategy on achievement and the survival of the effect of learning in the jurisprudence course for sixth-grade students in Makkah (unpublished master's thesis). Umm Al-Qura University, Makkah Al-Mukarramah.
- Al-Heilat, M. K.. (2013). How to be a brilliant critical thinker?. Amman, Jordan: Debono Center for Teaching Thinking.
- Al-Maqati, S. I. (2018). Obstacles of applying modern teaching strategies in teaching Legitimate sciences courses at the secondary stage of the

- course system from the teachers' point of view. *Journal of Human and Administrative Sciences*, p. (13), 17-46.
- Al-Tuwaijri, A. M. (2017). The reality of Legitimate science teachers teaching of critical thinking skills at the secondary stage in Al-Qassim educational region. *Educational Sciences Journal*, p. (8).
- Al-Zahrani, Gh. B. (2016). Availability of some critical thinking skills and their relationship to some variables among faculty of Sciences and Arts students of the preparatory year in Al-Makhwah. *International Journal of Excellence Development*, 7(13), 155-176.
- Andayani, S. (2020). Development of Learning Tools Based on Discovery Learning Models Combined with Cognitive Conflict Approaches to Improve Students' Critical Thinking Ability. *Jurnal Penelitian Pendidikan IPA*, 6(2), 238-242. <https://doi.org/10.29303/jppipa.v6i2.438>
- Apkoc, E. (2008). The impact of learner autonomy on the success of listening comprehension. A Master's Thesis Submitted to the Department of English Language Teaching in Accordance with the Regulations of the Institute of the Social Sciences. Trakya University, Institute of Social Sciences.
- Ashour, M. I. (2003). The effect of using educational games on achievement and scientific curiosity for second-grade intermediate school students in chemistry. *Center for Research and Educational Studies*, 1 (3), 125-184.
- Baranes, A., & Oudeyer, P. Y. (2013). Active learning of inverse models with intrinsically motivated goal exploration in robots. *Robotics and Autonomous Systems*, 61(1), 49-73.
- Barra, W. N., Wilujeng, I., & Kuswanto, H. (2019). The Effect of Inductive Learning Model Assisted Mindmap Mindjet Mindmanager towards Critical Thinking Skills of Students. *Journal of Physics: Conference Series*, 1233(1). <https://doi.org/10.1088/1742-6596/1233/1/012046>
- Bazleh, E., & Yarahmadzahi, N. (2012). The effects of applying Betts' Autonomous Learner Model on Iranian Students. *Studies in Self - Access Learning Journal*, 3 (3), 310321.
- Berlyne, D. E. (1954). A theory of human curiosity. *British Journal of Psychology*, 45(3), 180-191.
- Berlyne, D. E. (1978). Curiosity and Learning. *Motivation and Emotion*. 2, 97–175.
- Catalan, R. (2003). Sex differences in L2 vocabulary learning strategies. *Applied Linguistics*, 13(1), 54-77. doi: 10.1111/1473-4192.00037
- El-Dweik, M. M. (2015). The effect of developing curiosity on the level of creative thinking among gifted children with limited family culture. *Journal of Arab Studies in Education and Psychology - Saudi Arabia*, 5 (2), 335-375.
- Elekaei, A, Famarazi, S, & Tabrizi, H. H. (2016). Autonomy, critical thinking and listening comprehension ability of Iranian EFL learners. *International Journal of Applied Linguistics and English Literature*, 5(2), 40-48.
- EL-Shaarawy, A. M. G. (1997). Curiosity and its relationship to agreement for third-grade students in the first cycle of basic education. *Journal of the College of Education in Mansoura, Egypt*, C (33), 1-37.

- El-Sharif, B. A. (2011). The effectiveness of training on some dimensions of curiosity in increasing the creative thinking abilities of intermediate school students in Taif Governorate. *The Saudi Association for Educational and Psychological Sciences - Riyadh*, p. (36).11-43.
- Ennis, R. (2013). *The Nature of Critical Thinking: Outlines of General Critical Thinking Dispositions and Abilities* (Online), Available: <http://www.criticalthinking.net/longdefinition.html>.
- Felimban, H. M. (2014). Obstacles of applying modern teaching strategies for secondary school Legitimate science teachers at Mecca from the supervisors' and teachers' point of view introducing a proposal to address them (unpublished Ph.D. thesis). The Islamic University, EL-Medina EL-M Monawara.
- Fotiadou, A, Angelaki, C, & Mavroidis, I. (2017). Learner Autonomy as a Factor of the Learning Process in Distance Education. *European Journal of Open, Distance and E-learning*, 20(1).95-110.
- Fu, H. J., & Wang, J. C. (2021). Cultivation of Critical Thinking Skills in College English Writing under Blended Learning Model. *Creative Education*, 12, 1485-1493.<https://doi.org/10.4236/ce.2021.127113>.
- Fuad, N; Zubaidah, S; Mahanal,S. & Suarsini,E. (2017). Improving Junior High Schools' Critical Thinking Skills Based on Test Three Different Models of Learning. *International Journal of Instruction*, 10(1),1021-116.
- Guo, X., and Yang, L. (2017). A Study of College Students' English Autonomous Learning in the Network Environment. *3rd International Conference on Social Science and Management (ICSSM 2017)*, 709 - 713.
- Hein, H. (2014). Q & A. Curiosity: The heart and soul of student engagement. *Changing Schools*, 71, Spring,5-6.
- Hidi, S.E., Renninger, K.A. Interest Development and Its Relation to Curiosity: Needed Neuroscientific Research. *Educ Psychol Rev*, 31, 833–852. <https://doi.org/10.1007/s10648-019-09491-3>
- Hikmawati, H., Suastra, I., & Pujani, N. (2020). Ethnoscience-Based Science Learning Model to Develop Critical Thinking Ability and Local Cultural Concern for Junior High School Students in Lombok. *Jurnal Penelitian Pendidikan IPA*, 7(1), 60-66. doi: <https://doi.org/10.29303/jppipa.v7i1.530>
- Holec, H. (1981). *Autonomy in Foreign Language Learning*. Oxford, UK: Pergamon Press, 1981:45-48.
- Hussein, F. M. T.. (2015). the effect of a training program based on synthetic play in developing curiosity in kindergartens (unpublished master's thesis). The Hashemite University, Jordan.
- Ismail, M. E. (2003). *The child from pregnancy to adulthood* (5th edition). Cairo, Egypt: Dar Al-Qalam for Publishing and Distribution.
- Ismail, S. M. I. (2016). Using the learner independence model in teaching philosophy for developing the dimensions of self-regulation and the values of coexistence with the other. *Journal of Curricula and Instruction Studies*. 211, 79-138.
- Jarwan, F. A. (2017). *Teaching of Thinking: Concepts and Applications* (10th Edition). Amman, Jordan: Dar Al-Fikr for Publishing and Distribution.

- Jirout, J. J., Vitiello, V. E., & Zumbrunn, S. K. (2018). Curiosity in schools. In G. Gordon (Ed.), *The New Science of Curiosity* (pp. 243–266). Hauppauge: Nova.
- Kafrouni, N. F. (2016). Authenticity of thinking and its relationship to the motive of curiosity among second year secondary students in Damascus Governorate official schools (unpublished master's thesis). Faculty of Education, University of Damascus.
- Kashdan, T., & Silvia, P. (2009). Curiosity and interest: The benefits of thriving on novelty and challenge. In C. R. Snide and S. J. Lopez (Eds.), *Oxford handbook of positive psychology* (pp. 367-374). Oxford University Press.
- Ke, X (2016). On Cultivating Autonomous Learning Ability for University Students Based on Web. *Theory and Practice in Language Studies*, 6(9), 1797-1803.
- Ke, X (2016). On Cultivating Autonomous Learning Ability for University Students Based on Web. *Theory and Practice in Language Studies*, 6(9), 1797-1803.
- Kibga, E. Gakuba, E. and Sentongo, J. (2021). Developing Students' Curiosity Through Chemistry Hands-on Activities: A Case of Selected Community Secondary Schools in Dar es Salaam, Tanzania. *EURASIA Journal of Mathematics, Science and Technology Education*, 17(5), <https://doi.org/10.29333/ejmste/10856>.
- Koranda, D., & Sheehan, K. B. (2014). Teaching curiosity: an essential advertising skill?. *Journal of Advertising Education*, 18(1), 14-23.
- Ku, Y. (2009). Assessing students' critical thinking performance: Urging for measurements using multi-response format. *Thinking Skills and Creativity*, 4, 70-76.
- Lau, J. (2011). *An Introduction to Critical Thinking and Creativity*. John Wiley & Sons Inc, Massachuset.
- Lindholm, M. (2018). Promoting curiosity?: Possibilities and pitfalls in science education. *Science & Education*, 27(9-10), 987-1002. <https://doi.org/10.1007/s11191-018-0015-7>
- Little, D. (1991) *Learner Autonomy: Definitions, Issues and Problems*. Dublin: Authentik, 4.
- Little, D. (2006). Learner autonomy: Drawing together the threads of self-assessment, goal-setting and reflection. European Centre for Modern Languages (ECML, Hrsg.), *Training teachers to use the European Language Portfolio*.
- Metwally, E. S. (2017). A suggested strategy based on active learning to teach jurisprudence in developing some critical thinking skills among Al-Azhar secondary school students. *Journal of Arab Studies in Education and Psychology*, p. (86), 151-181.
- Osroff, W. (2016). *Cultivating Curiosity in K–12 Classrooms*. Alexandria, Virginia : ASCD.
- Page, D., & Mukherjee, A. (2006). Using Negotiation Exercises to Promote Critical Thinking Skills. *Business Simulation and Experimental Learning*, 30 (1): 71-78.
- Papak, P, Vujičić, L, & Ivković, Z. (2017). Project activities and encouraging critical thinking: Exploring teachers' attitudes. *CEPS Journal*, 7(3) 27-46.

- Proulx, G. (2009). Integrating Scientific Method and Critical Thinking in Classroom Debates on Environmental Issues. *The American Biology Teacher*, 66 (1): 26-33.
- Raine, A, Reynolds, C, Venables, P, & Mednick, S. (2002) Stimulation seeking and intelligence: A prospective longitudinal study. *Journal of Personality and Social Psychology*, 82(4), 663–674.
- Rinkevich, J. L. (2014). The relationship among student creativity, curiosity, and academic intrinsic motivation: a mixed methods phenomenological study of sixth grade students. (Doctoral dissertation), Indiana University of Pennsylvania.
- Roshdy, F. (1997). The effect size the complementary face of statistical significance, *The Egyptian Journal of Psychological Studies*, Egypt, 7 (16), 57-75.
- Salimi, A., & Ansari, N. (2015). Learner autonomy: investigating Iranian English teachers' beliefs. *Theory and Practice in Language Studies*, 5(5), 1106-1115.
- Schmidt, C. (2016). Connecting content, curiosity, and experience with project- and maker-based learning. *Changing Schools*, 75, 17-19.
- Sedighi, E, & Tamid, N. (2016). The Relationship between Iranian EFL Learners' Autonomy and their Vocabulary Learning Strategies with a Focus on Gender. *The Journal of Applied Linguistics*, 9 (18), 183-196.
- Wade, S. and Kidd, C. (2019). The role of prior knowledge and curiosity in learning. *Psychonomic Bulletin & Review*, 26:1377–1387. <https://doi.org/10.3758/s13423-019-01598-6>
- Zhao, L. et al., (2011). What Makes Them Happy and Curious Online? An Empirical Study On High School Students' Internet Use from A Self – Determination Theory Perspective. *Journal of Computers and Education*, 56 (2), 346 – 356.
- Zubaidah, S., Fuad, N. M., Mahanal, S., & Suarsini, E. (2017). Improving Creative Thinking Skills of Students Through Differentiated Science Inquiry Integrated with Mind Map .*Journal of Turkish Science Education*, 14(4), 77–91. <https://doi.org/10.12973/tused.10214a>