

## Evaluation of Geography books questions for the middle stage according to the levels of cognitive depth

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### Abstract

The research aims to evaluate the questions of the geographical books of the preparatory stage according to the levels of cognitive depth, which were taught for the academic year (2021-2022). To achieve the research goal, the researcher adopted the descriptive approach (content analysis method), a research approach, and the research community was represented, and I assigned it to the questions of the geographical books of the preparatory stage, which were (123) main questions, and (357) sub-questions.

To achieve the research questions, the researcher prepared the research tool by reviewing the literature and previous relevant studies, which were represented by preparing a list of the cognitive depth levels of Norman Webb "(remembering and reproducing, applying concepts and skills, deductive thinking, and extended thinking)", and the validity of the tool was verified by presenting it to the arbitrators who are specialized in teaching, measurement and evaluation methods, and the stability of the analysis was verified in two ways: the researcher's agreement with himself over time, and agreement with the external analyst after agreeing on the rules and foundations of the analysis, as the coefficient of persistence over time reached (96.28%), and the coefficient of stability between the researcher and the external analyst (96.01), and the researcher's analysis of geographer's questions for the preparatory stage was based on the explicit idea of recording alone, the frequency unit of scoring, and the agreement with the external analyst after agreeing on the rules and foundations of the rules of the analysis, as it reached (96.28%), the coefficient of persistence between the frequency, the percentile, the percentage of calculation, the equival of the equation, and the reliability of calculation to calculation of the difference in the difference in the levels of observation levels of observation and the levels of observation.

The results showed that the levels of cognitive depth were available in varying proportions in the questions of the geographical books of the middle stage. The level of (remembering and reproducing) was ranked first with repetitions of (283) repetitions, and it was (75.27%), and came in the second place (applying concepts and skills) with repetitions of (74) repetitions, and the percentage of (19.68%), and the level of (deductive thinking) came in the third place with repetitions of (15) repetitions, and by (3.99%), and (extended thinking) came in the fourth place with repetitions of (4) and by (1.06%).

The results showed that there is a great disparity between the availability rates of cognitive depth levels in the questions of the geographical books of the preparatory stage. The first level (remembrance and reproduction) was available to a high degree, while the questions of the geographical books of the preparatory stage lacked for the third level (deductive thinking), and the fourth level (extended thinking). The results of the research also concluded that there is a statistically significant difference at the level of significance (0.05), and a degree of freedom (3) using the Kai square for good conformity, as the calculated value of the K2 square was (134.207), and the value of the K2 square was (7.82).

**Keywords:** geographical books, cognitive depth, Kai square.

## I. INTRODUCTION

Research problem: The textbook is one of the main elements of the curriculum, and one of the good standards of the textbook, including the book of geography, is to contain evaluation educational questions at the end of each semester, which help the student to self-assess his learning. Bloom's classification of knowledge levels attracted the attention of many researchers in the educational field, but he was subjected to a lot of criticism, and then Bloom's classification, which was modified in (2001) by some students of Bloom, most notably Krathol and Anderson, after the emergence of the classification (1997-1999) (Norman Webb), the quadrilateral of levels of cognitive depth, which attracted the attention of many educational researchers in many countries of the world, including (the United States of America, China, Malaysia, Canada, and Italy). (Elephant, 2019, p. 235) and that much of the literature, previous studies, and conferences confirmed that the end-of-class questions in the textbooks did not include all the required levels of objectives and these questions were not comprehensive in measuring learning outcomes, and among these studies was the study (Abdul Rida, 1996) that dealt with the evaluation of the questions of the geographical books of the intermediate stage in light of the objectives of the curriculum and the learning outcomes, and the study (Al-Jabouri and Aarash, 2008), which dealt with the evaluation of book questions based on the classification of Bloom to confirm in practice the extent to which the questions in the social books achieve the desired goals, and the study (Al-Shammari, 2019), which dealt with the evaluation of the questions of the social books of the primary stage according to the classification of Gilford. As stated in one of the proposals of the Sixth International Scientific Conference in July 2018 held at the Faculty of Education, Ibn Rushd, (evaluating the questions of the books of the preparatory stage according to other standards and skills). Through the researcher's work in teaching the subject of

geography in the preparatory stage for a period of more than eighteen years, and his modest experience, a feeling emerged in the researcher on the need to conduct a study to evaluate the questions of the geographical books of the preparatory stage to know the levels of cognitive depth to diagnose the strengths, work to strengthen them, identify weaknesses and work to address them, and work to improve the end-of-class questions in the geographical books of the preparatory stage in line with the scientific development in the world and modern educational theories and trends.

The problem of research revolves around the evaluation of geographical books' questions for the preparatory stage according to the levels of cognitive depth, because the questions are important in the educational process, and the researcher wanted to show the availability of the four levels of cognitive depth, namely (remembering and reproducing, applying concepts and skills, strategic thinking, and extended thinking) in the questions of these books, and hence the research problem emerged in the evaluation of the end-of-class questions in light of the quadruple classification of (Webb), and the extent of its focus on the levels of cognitive depth, and in light of the above, the research problem can be crystallized through the following question: - Are the levels of cognitive depth available in the questions of the geographical books for the preparatory stage?

Second: The importance of the research :

Geography: It is one of the branches of social sciences, which is the science that studies the human relationship with the environment, and clarifying the forms of interaction between man and the earth and the impact of this interaction, that is, it is one of the sciences that combines the natural and human aspects, and shows the nature of the human relationship with the environment and its positive or negative impact on the environment and the extent to which human beings are affected by environmental conditions, that is, geography deals with the

study of the Earth's surface as a home for man and the place where man practices all his economic, social and other activities and events. (Al-Laqrani and Abu Sneh, 1990, p. 19). Educational questions work to increase motivation, as well as educational questions are one of the most important means of cognition that activate information in the minds of students and retrieve and benefit from it, and that the questions are important because they work to raise the attention of students on the main ideas in the subjects of the subject, and summarize the students' academic materials, and help to understand and retrieve ideas in time and benefit from them in the future, and educational questions are one of the most used topics in educational institutions, whether this institution is a school, a college or other educational institutions, and that the essence of the educational process is based on asking questions, as there is no teaching and learning process without asking questions. (Druze, 2005, pp. 19-48). The questions are the basis of the teaching method. Through the questions, the teacher can involve students in the educational process and become more effective, whether by participating in answering questions or asking questions to the teacher or their peers. It has been said that those who do not improve interrogation do not improve teaching, as the role and importance of questions in the educational process cannot be ignored. (Muhammad & Muhammad, 2014, p.147). Books' questions, including geographical books, have been developed on the basis of Bloom's classification of knowledge levels, and as a result of criticisms of Bloom's classification in the cognitive field, Norman Webb invented to harmonize standards, content and evaluation, and work to classify knowledge according to its depth levels, and achieve meaningful learning by linking new knowledge to the previous knowledge of students in his cognitive structure, and this helps to link ideas and their integration, which contributes to increasing students' ability to distinguish, compare and understand contradictory ideas, and that levels of cognitive depth lie in their importance that they make the student raise a number of questions about things with ( why ) and not

only ( how ), as well as make the student want to reach the highest levels of understanding and work to satisfy his curiosity and interests in all the materials he studies, and will benefit from the search for evidence and evaluation, and will acquire a great ability to link ideas with each other, and increase the student's self-motivities towards learning, and will be able to link new skills and concepts of daily life, and make the student inclined to read and learn what is beyond the requirements of study. (Elephant, 2019, pp.237-238)

There is a need to re-evaluate the questions of the geographical books of the preparatory stage according to modern standards, especially if these standards are concerned with the higher levels of thinking such as the levels of cognitive depth, and the availability of these levels in the end-of-class questions in the geographical books of the preparatory stage. Bloom's classification of the six knowledge levels in 1956 is one of the most famous classifications in determining educational goals in its various fields and levels.

(Anderson and Krazwall, 2006, pp. 20-21)

Third: The goal of the research: This research aims to evaluate the questions of the geographical books of the preparatory stage according to the levels of cognitive depth by answering the following questions:

1- What is the level of availability of levels of cognitive depth in the questions of the book of foundations of geography and its techniques for the fourth grade literary? 2- What is the level of availability of cognitive depth levels in the natural geography book questions for the fifth grade literary? 3- What is the level of availability of levels of cognitive depth in the questions of the book of human geography for the sixth grade literary?

Fourth: The limits of the research: This research is limited to:

1- Questions of the Book of Fundamentals of Geography and its Techniques for the fourth grade of literature, to be taught in the Republic of Iraq for the academic year (2021-2022) by

the Ministry of Education Committee, eleventh edition/ revised, (2019AD).

2- Questions of the Natural Geography Book for the fifth grade literary, scheduled to be taught in the Republic of Iraq for the academic year (2021-2022) by the Ministry of Education Committee, eleventh edition/ revised, (2019AD).

3- Questions of the book of Human Geography for the sixth grade of literature, scheduled to be taught in the Republic of Iraq for the academic year (2021-2022) by the Ministry of Education Committee, eleventh edition/ revised, (2019AD).

Fifth: Definition of terms:

Definition of questions in terms: Defined by (Gagsters) as: Interrogative expression used in testing information as in oral and written examinations. (Gagsters, 1972, p.86)

Procedurally, the researcher defined the questions as: The questions that exist at the end of each chapter of the Geographical Books for the middle stage that help students to know their levels and what they have gained from the contents of the book's chapters and the extent to which the educational goals related to the textbook are achieved.

Geography is defined by (Al-Amin) as: "A science that is interested in studying the various natural and human phenomena on the surface of the earth or on part of it and analyzing the relationships and connections between them spatially." (Al-Amin 1988, p. 23)

The researcher defined geography procedurally as: a set of facts, information, concepts, principles, skills and geographical data, whether natural or human phenomena, found in the geographical books of the preparatory stage, the literary branch, which includes (the fourth literary – the fifth literary – the sixth literary).

- The preparatory stage: It is the second stage of secondary education for a period of three years that comes after the intermediate stage and precedes the stage of university education and in which the discoveries of students'

capabilities and tendencies are established, enabling them to reach higher levels of knowledge and skill. (Ministry of Education, 2018, p. 18)

Cognitive Depth Levels:

Webb (2006 Webb,) defined the levels of cognitive depth as: the degree of simplicity or complexity of the knowledge required by the question, and concerned with the mental processes that the learner performs before answering the question, he does not actually care about the leg in which the act is used in the question and the mental process that is practiced, that is, he cares about the simplicity and complexity of the processes that the learner exercises to reach the answer to a particular question. (Webb, 2006, p.88)

The researcher defines the levels of cognitive depth as: The method of organizing mental processes and the degree of simplicity and complexity of knowledge included in the questions of the end of the chapters in the geographical books of the preparatory stage to be taught in the Republic of Iraq for the academic year (2021-2022) and consists of four levels: - (remembering and reproducing, applying concepts and skills, strategic thinking, and extended thinking).

## 2. A Theoretical Framework and Previous Studies

First: Theoretical framework:

Norman Webb: In 1997-1999, Dr. Norman Lott Webb developed a model for classifying the level of cognitive goals and called them levels of cognitive depth, as Webb adopted a classification that all elements of the curriculum that are based on the knowledge requirements necessary to produce an acceptable response reflect the level of cognitive depth to be achieved in order to achieve the goals of the educational process. The knowledge used in this classification includes all forms of knowledge (i.e. procedural, declaratory, personal, etc.). (Mississippi State University, 2009, p.5)

The organization of knowledge in the cognitive depth model is of varying complexity according to the classroom, and what students have previous knowledge, and the cognitive depth depends on what students must know, and on the ability of students to generalize knowledge in other similar situations, and their ability to understand what they have learned from knowledge, and thus it corresponds to the introduction of structural theory, and (Webb) pointed to the need to harmonize between the goals and standards used in the evaluation and measurement of cognitive depth, i.e. the evaluation depends on the level of students' thinking that allows them to make generalizations, and cognitive construction. (Victor, 2010,p23)

Webb believes that the cognitive depth is represented by the level of mental complexities related to the information that students are expected to know, the way to benefit from that information in different fields, the way they access generalizations, and the amount of previous experience they have to understand ideas. (Webb, 1997, p.15)

(Webb) defined "the depth of knowledge as the degree of simplicity and complexity of knowledge required by the question, and is concerned with the mental processes that the student performs before answering a question, that is, he does not actually care about the way in which the verb is used in the question, and the mental processes that are practiced, that is, he deals with the simplicity and complexity of the processes that the student exercises to answer a particular question, (Webb, 2006, p.88), and defined the depth of knowledge as" the level of mental complexity that relates to the information that the student can know, and how to benefit from knowledge in different contexts and how to reach generalizations, and how much prior knowledge he possesses to understand ideas. " (Jackson, 2010, p. 3).

The four levels of cognitive depth at (Norman Webb) are:

#### Level 1: Remembrance and Reproduction

This level includes the basic tasks in which the student is asked to remember or reproduce

knowledge or skills, and that this level usually involves the student's handling of facts and characteristics of things, and may include the use of simple formulas and procedures, and the retrieval of principles and concepts that the student has learned before, that is, it is the recall and recall of stored knowledge as it is or in the form of new patterns, and this level of knowledge corresponds to shallow knowledge, which is called the process of learning (deaf learning), but the questions at this level are either the student knows the answer or does not know it, that is, the answer does not need more than one mental process. (Elephant,2019, pp.241-242)

#### Level 2: Applying Concepts and Skills

This level describes the performance of processes, activities, and mental treatments that exceed the level of recall and reproduction, and that at this level students are asked to compare or clarify the variation between a group of events, concepts, places, or people, and the information in it turns from one form to another, such as giving an example, or sorting and classifying elements into categories that make sense, or the student describes or clarifies and interprets an issue or problem, and the cause and effect, clarifying relationships, or indicating importance or impact, or clarifying the point of view or processes. This level of students requires going beyond the process of explanation and description. (Elephant,2019, p. 243)

#### Level 3: Strategic Thinking:

This level describes the cognitive tasks that use higher thinking processes, such as analysis, evaluation, drawing and predicting results, and support with evidence, generalization and innovation, and that this level includes high degrees of complexity compared to the first and second levels, and at this level, the student is asked to use logical processes characterized by a high degree of abstraction, analysis, planning, evaluation, creative thinking and reliance on higher thinking skills, and that the cognitive requirements at this level of the cognitive depth are characterized by a kind of complexity and abstraction and can produce more than one

educational output, and the complexity does not result from the presence of many responses, but rather from more complex logical processes. (Elephant,2019,p. 244)

#### Level 4: Extended Thinking:

This level of cognitive depth describes the complex cognitive tasks that require the expansion of the most advanced higher thinking processes, which are complex logical thinking and planning, and thinking that often requires an extended work period, and that the extended period of time is not a distinctive factor if the required work is recurrent and its application does not require a great awareness of concepts. At this level, the cognitive requirements are very high, and the solution processes are characterized by a great degree of complexity, and the student is required to make many connections, link ideas to content within the scope of content, and choose a specific method from many of the available alternatives on how to solve the problem. (Elephant,2019,p. 245)

#### Previous studies:

- Study (Shaheen 2019) (The availability of levels of cognitive depth in biology books for the secondary stage – curriculum system – in the Kingdom of Saudi Arabia) This study was conducted in the Kingdom of Saudi Arabia (Islamic University in Medina – Faculty of Education) This study aimed to: 1- Know the differences between levels of cognitive depth in biology books (1, 2, 3) – curriculum system – for the secondary level in the Kingdom of Saudi Arabia.2- Disclosure of the availability of levels of cognitive depth in biology books (1, 2, 3) – curriculum system – for the secondary level in the Kingdom of Saudi Arabia. To this end, the researcher adopted the descriptive approach (content analysis) to achieve its objectives. The study community and its sample consisted of all secondary school biology curriculum books in the Kingdom of Saudi Arabia, which numbered (3) for the academic year (2018-2019). In this study, the researcher adopted statistical methods for data processing and used the iterations and percentages for each paragraph, the Holsty

equation, to calculate the stability coefficient, and to test t square k (good match). (Shaheen, 2019, pp. 428-452)

- Shujairi study (2021) (the availability of levels of cognitive depth in the history of Arab-Islamic civilization book for the fourth grade literary). This study was conducted in the Republic of Iraq at the Faculty of Basic Education, University of Diyala. Its purpose was: 1- Analyzing the content of the book History of Arab-Islamic Civilization for the fourth grade literary in light of the levels of cognitive depth.2- Disclosing the differences between the levels of cognitive depth in the History of Arab-Islamic Civilization at the level of significance (0.5%). To this end, the researcher relied on the descriptive approach (content analysis) and the study sample was represented by the content of the history of the Arab-Islamic civilization book for the fourth grade of literary to be taught for the academic year (2020-2021), after excluding (introduction, index, and end of semesters questions), and the number of pages subject to analysis was (176) pages. In this study, the researcher adopted statistical data processing methods. He used the iterations and percentages of each paragraph, the Holsty equation, to calculate the stability coefficient, and to test the square of K (good match). (Shrubby,2021, pp.14-119)

4- Kazim's study (2021): (Analysis of the content of chemistry books for the intermediate stage according to cognitive depth)

This study was conducted in the Republic of Iraq at the University of Baghdad, Faculty of Education, Ibn Al-Haytham. The aim of the study was to analyze the books of science that include chemistry for the first intermediate grade and the second intermediate grade and the book of chemistry for the third intermediate grade according to the levels of cognitive depth. To this end, the researcher relied on the descriptive approach (content analysis), and the study sample consisted of the chemistry classes included in the science books for the first and second grades, the average, and the chemistry

book for the third grade, the average to be taught for the academic year (2020-2021). In this study, the researcher adopted statistical data processing methods. He used the iterations and percentages of each paragraph, and the Cooper equation, to calculate the stability coefficient.

### 3. Research Approach and Procedures:

The descriptive researcher (content analysis method) used a method for the study, as it is one of the methods of scientific research used in educational research to describe the content objectively, logically, and quantitatively in light of the analytical unit used, and this method was used in studies dealing with the analysis and evaluation of textbooks, analysis and evaluation of questions, and educational activities. (David and Abdul Rahman, 1990, p. 169)

Table (1) *Distribution of macroquestions (main and sub-questions) in the geographical books of the preparatory stage and their percentages*

No.	Class.	The Book	Number of key and sub-questions	Pg. Ct.
1	Fourth Literary	Fundamentals and Technologies of Geography	100	28 January
2	Fifth Literary	Physical geography	154	43,14%
3	Sixth Literary	Human geography	103	28.85%
	Total		357	100%

Second: The research tool: The research tool is defined as all the means used by the researcher to collect data, information, and evidence through which all research questions are answered, or prove the validity of his hypothesis. (Al-Zubai and Al-Ghannam, 1981, p. 175). The analysis tool is the card designed by the researcher to collect data, and monitor the frequency rates shown in the documents whose content is analyzed, and that the tool's numbers are of great importance because they help the researcher to follow one system in analyzing the data, and help the researcher to monitor the frequency rates, digitally, and this helps to use the data in achieving the objectives. (Ta 'ameh, 2004, p. 187), and given the lack of a ready-made tool that achieves the

First: The research community and its sample: The current research community consists of the questions of the geography books of the preparatory stage, the three books to be taught in schools of the Republic of Iraq for the academic year (2021-2022).

As for the research sample, it included all the vocabulary of the research community represented in the questions of the geographical books of the preparatory stage, as the number of main questions in these books reached (123) questions, and the total number of questions (main and subsidiary) reached (357) questions, distributed in the three geographical books, and as shown in Table (1), so the researcher will work to subject all the research community's items to analysis according to the levels of cognitive depth.

research objectives, the researcher took a set of steps to prepare the research tool to evaluate the questions of the geographical books of the preparatory stage and included the levels of cognitive depth. To this end, the researcher followed the following procedures:

A - Review the literature and previous studies that dealt with levels of cognitive depth, including Shaheen study (2019), Shaheeri study (2021) and Kazem study (2021).

B- Informing the researcher about some of the previous studies in the field of evaluating questions to benefit from its approach in building the analysis card, including these studies (Abdel Rida study, 1996), the study of

(Shammari, 2019), and the study of (Kayan, 2020).

C- Utilizing the scientific sources and theoretical aspects of this research.

D- Preparing a questionnaire that includes the levels of knowledge depth, definitions and description according to the questions of geographical books, and presenting it to the experts specialized in teaching methods, measurement and evaluation to find out the suitability of the tool to evaluate the questions of geographical books for the preparatory stage according to the level of cognitive depth.

E - Making the necessary adjustments to the questionnaire in line with the main objective of the research, which is to evaluate the questions of the geographical books of the preparatory stage according to the levels of cognitive depth.

The validity of the research tool: The researcher presented the list of levels in its initial form to a group of arbitrators specialized in teaching, measurement and evaluation methods, in order to know their views on the suitability, validity, and employment of the four levels. Where (Bloom) believes that the paragraph that obtains an agreement between the arbitrators equal to (75%), this paragraph is valid to achieve the validity of the tool. (Bloom, 1971, p96)

The researcher has determined a percentage of agreement of (80%) and more as an indicator of the validity of the tool, and the number of arbitrators reached (15) arbitrators specialized in teaching, measurement and evaluation methods Appendix (2), so the researcher prepared the level valid if he has the approval of (12) arbitrators, as the percentage of agreement equals (80%), and the researcher took all the opinions and observations of the arbitrators, on which the arbitrators were unanimous, and thus (the analysis tool) met the condition of validity.

### 3. Application of the research tool:

The research tool is defined as the means used by the researcher to collect information and data to be able to accurately answer the

questions he asked in his research. (Omar, 2009, p. 86)

The researcher used the content analysis method to reveal the cognitive depth levels of the geo-book questions for the preparatory stage according to the list prepared for this purpose.

Analysis Units: The researcher has adopted the (idea) unit in this research, and the researcher's choice of this unit is due to several reasons, that the idea unit is the best unit suitable for the nature of this research, on the one hand, and on the other hand, most of the previous studies relied on the idea unit such as the study (Abdul Ridha, 1996) and the study (Shammari, 2019).

Census Unit: It means that the researcher gives weight to each unit of the content to be analyzed, and it is determined by the number of times it is repeated, and then turned into percentages, to extract a Quantitative description or value. (Al-Khawlida and Yahya, 2006, p. 178). The counting unit determines accurately, adjusts the methods of calculating the elements that have been selected from the categories, and takes into account when counting the repetitions, and the number of repetitions, that is, recording the number of times this unit or that unit appears, and each unit must have the same weight and significance in relation to the research problem. (Angers, 2006, p. 279). Based on the above, the researcher has relied in this research on (repetitions) as a unit of the census and converting the repetitions to percentages for the purpose of analysis.

Analytical constants: The stability of analysis is meant to obtain the same results if the analysis is repeated again and the same steps are followed on the content or the sample itself. (Al-Bassiouni, 2013, p. 299). In order to achieve the requirement of objectivity, the researcher used two types of stability:

1- Stability over time: Stability over time means that the analyzer obtains the same results if the analysis is repeated in the same circumstances, and the same content or sample, which indicates the stability of the tool. (Allassaf, 1995, p. 187) The researcher

completed the first analysis of the research sample on (5/2/2022), while the second analysis was on (26/2/2022), i.e. with a time difference, (21 days), for the same sample that the researcher analyzed as it reached (100), and the researcher used the equation (Holsty) to extract the stability coefficient between the researcher and himself (stability over time), so the stability coefficient, over time was (96.028%), and as shown in Table (2).

2- Stability with an external analyst: To achieve this type of stability, the researcher hired an external analyst with experience and specialization, and the researcher provided the

external analyst with a copy of the analysis tool, the lists of question analysis and the geographical books for the preparatory stage, and the researcher, together with three experienced geographical teachers, determined the answer to each question and the page number that includes the answer to the question to facilitate the process of reference, and agreed on the rules of the basis of the analysis followed, and the analysis included the sample itself, which was (100%), and the coefficient of stability between the researcher and the external analyst reached (96,01%), as shown in Table (2).

Table (2) *Values of the stability coefficient between the researcher and himself and between the researcher and the external analyst*

No.	Type of Agreement	Coefficient of agreement
1	Researcher with external analyst	96.01%
2	The researcher with himself through time.	96,28%

The value of stability if it is (0.75), the level of stability is high, and if it is (0,50-0,74) is acceptable, but if it is less than that, it is questionable. (Abd al-Hadi, 2001, 388) In light of the above, the results of stability reached by the researcher, the tool achieved the condition of stability.

Third: Statistical and Computational Methods: In this research, the researcher has used the following statistical and computational methods:

1. Frequency distribution, and percentage.
- 2- The arithmetic mean to calculate the number of repetitions expected for each level.
- 3- Cooper's formula: To measure the coefficient of agreement between the arbitrators.
- 4- The equation (Holsty) to calculate the coefficient of stability of the analysis between the researcher and himself, and the researcher and external analyst.
- 5- Kai square (good matching) to know the deviation of the actual frequencies (watching) from the expected frequencies.

#### 4. Presentation and Interpretation of Results:

First: Presentation of the results: This research aims to evaluate the questions of the geographical books of the preparatory stage according to the levels of cognitive depth. The answer to the research questions: The researcher will clarify the general results he reached by analyzing the questions of the geographical books of the preparatory stage according to the levels of cognitive depth, knowing that the subject of the analysis are the questions of the three books. Table (3) and (4) show the general results of the cognitive depth levels in the geo-book questions for the preparatory stage.

Table (3) *Frequencies and Percentages of Geographical Book Questions for the Preparatory Stage According to Cognitive Depth Levels*

No.	Level	frequencies	Pg. Ct.
1	Remembrance and Reproduction	283	75.27

2	Applying concepts and skills	74	19.68
3	Strategic Thinking	15	3.99
4	Extended Thinking	4	1.06
Total		376	100

Table (4) *Frequencies and percentages of geographical books questions for the fourth, fifth and sixth grades according to levels of cognitive depth*

Level	Fundamentals of Geography and its Technologies Fourth Grade Literary		Grade 5 Literary Natural Geography		6th Grade Literary Human Geography		Total	
	frequencies	Percentage	frequencies	Pg. Ct.	frequencies	Pg. Ct.	frequencies	Pg. Ct.
Remembrance and Reproduction	80	76.92	133	85.26	70	60.34	283	75.27
Applying concepts and skills	21	20.19	15	9.61%	38	32.76	74	19.68
Strategic Thinking	3	2.89.	7	4.49	5	4.31	15	3.99
Extended Thinking	Chairman: Mr. Abdullah Khalil	Chairman: Mr. Abdullah Khalil	1	0.64	3	2.59	4	± 1.06
Total	104	100	156	100	116	100	376	100

1- The general results of analyzing the geographical books of the preparatory stage according to the levels of cognitive depth

After the researcher analyzed the geographical books' questions according to the levels of cognitive depth, which reached (4) levels, the total number of repetitions of geographical books' questions for the preparatory stage reached (376) repetitions, distributed among the three books, and the results of the analysis were as follows:

1- The level of recall and reproduction ranked first with (283) repetitions, and it was (75.27%). By (80) repetitions, and by a percentage of (76.92%) in the book Fundamentals of Geography and its Technologies for the fourth grade literary, and(133) repetitions, and a percentage of (85.26%) in the questions of the book Natural Geography for the fifth grade literary, and(70) repetitions, and a percentage of (60.34) in the

questions of the book Human Geography for the sixth grade literary.

- The second ranked the level of application of concepts and skills, where he received (74) repetitions, and the percentage was (19.68%), with (21) repetitions, and a percentage of (2.19%) in the book of the basics of geography and its techniques for the fourth grade literary, and(15) repetitions, and a percentage of (9.61%) in the questions of the book of natural geography for the fifth grade literary, and(38) repetitions, and a percentage of (32.76%) in the questions of the book of human geography for the sixth grade literary.

- The third ranked the level of strategic thinking, as it received (15) repetitions, and it was (3.99%), with (3) repetitions, and a percentage of (2.89%) in the book of the basics of geography and its techniques for the fourth grade literary, and(7) repetitions, and a percentage of (4.49%) in the questions of the

book of natural geography for the fifth grade literary, and(5) repetitions, and a percentage of (4.31%) in the questions of the book of human geography for the sixth grade literary.

- (Extended thinking) level questions came in the fourth and last place with a total of (4) repetitions, and a percentage of (1.06%). The questions of the book of Fundamentals of Geography and its Techniques for the fourth grade of literature were devoid of questions of the level of (extended thinking), and this level obtained a repetition of (1) only, and a percentage of (0.64%) in the questions of the book of natural geography for the fifth grade of literature, and(3) repetitions, and a percentage of (2.59%) in the questions of the book of human geography for the sixth grade of literature.

- Conducting a balance between the repetitions of the observed questions and their proportions and the repetitions of the expected questions and their proportions and finding the value of

the Kai square for good conformity with the questions of the geographical books of the preparatory stage. The researcher made a balance between the repetitions and ratios of observed questions, and the repetitions and ratios of expected questions according to the classification of (Webb) for the cognitive depth levels of the geo-book questions for the preparatory stage through table (5), it is noted that there is a high deviation of the value of the repetitions observed from the value of the expected repetitions when comparing the calculated value of Kay (134.207), with the value of Kay (7.82) at the degree of freedom (3), and the level of significance (0.05), and when comparing the percentage of repetitions observed for questions with the percentage of expected repetitions, it is noted that there is a significant difference between them, and this indicates a lack of questions that measure the higher levels of strategic thinking as it is only (3.99), and the extended thinking that formed (1.06).

Table (5) *Comparing the frequencies and ratios observed for the geographical book questions for the preparatory stage with the frequencies and percentages expected*

Level	Frequencies observed	Pg. Ct.	Expected Frequencies	Pg. Ct.	$\chi^2$ Square
Remembrance and Reproduction	283	75.27	94	25	380.01
Applying concepts and skills	74	19.68	94	25	4.255
Strategic Thinking	15	3.99	94	25	66.393
Extended Thinking	4	1.06	94	25	86.17
Total	376	100	376	100	536.828
&Modified					134.207

Through the observation of Table (5), it is clear that the value of the calculated K-square (134.207) has a statistical significance at the level of significance (0.05) and degree of freedom (3) because it is greater than the tabular (7.81), and this indicates the existence of differences between the observed and expected repetitions according to the levels of cognitive depth in the questions of the geographical books of the preparatory stage.

Interpretation of the results: The results of the analysis of the geo-book questions for the preparatory stage showed the availability of levels of cognitive depth in the geo-book questions for the preparatory stage in varying proportions, and after the researcher compares the achieved ratios with the expected ratios and repetitions of the levels of cognitive depth, the following results showed:

First: The questions of the geographical books of the preparatory stage fall within the levels of

cognitive depth (remembering and reproducing, applying skills and concepts, strategic thinking, and extended thinking), where (100%) of the total number of (357) questions, and there is a great disparity between the proportions of the four levels of cognitive depth.

- The first level questions (remembrance and reproduction) received the highest percentage among the levels of cognitive depth, as it reached (75.27%), with a total of (283) repetitions of the total repetitions, and this indicates that the authors of the geographical books of the preparatory stage paid attention to the level of remembering and reproduction in the first place, as the answer to the questions of this level depends heavily on retrieving facts, defining terms, retrieving concepts and principles that were previously learned and implementing simple tasks, and at this level of questions the performance of students is represented in the implementation of some procedures that can be implemented mechanically. Amira, 1991, p. 106 )

- As for the questions of the second level (application of concepts and skills), it came in second place, reaching (19.68), with a total of (74) repetitions of the total repetitions, as (Webb) sees quoting the elephant that the questions of this level require the description of some processes, activities and mental treatments that exceed the level of recall, and require the ability to compare and distinguish differences, and the processes of description, classification, sorting and clarifying relationships, included in the content of the curriculum and the application of those concepts, processes and skills in a more complex way than the first level, and that these questions depend on a kind of flexible thinking, and choose between alternatives and solutions, and require the integration of some mental processes and not just a normal response, as the student decides what to do using unfamiliar methods of logical processes and strategies. (Elephant, 2019, p.241)

- The developers of the geographical books questions for the preparatory stage at the third level (strategic thinking), the answer to which requires the description of the cognitive tasks

that use higher thinking processes, such as analysis, evaluation, drawing results, predicting results, and support with evidence, generalization and innovation, and that this level includes high degrees of complexity compared to the previous two levels, and at this level the student is required to use logical processes characterized by a high degree of abstraction, planning, analysis, creative thinking, evaluation, and reliance on higher thinking skills, and that the cognitive requirements in this questions are characterized by a kind of complexity and abstraction and can produce more than one educational output, and the complexity does not result from the presence of many responses, but rather on more complex logical processes, as the percentage of the third level reached (3.99) with a total repetitions of (15) repetitions, and this research agreed with previous studies such as the study (Abdul Ridha, 1996), the study (Al Hens, 2008), the study (Shammari, 2009), and the study (as a settlement, 2020).

- The authors of the geo-books questions for the preparatory stage of the fourth level (extended thinking) were largely neglected, as their percentage reached (1.06) with a total of (4) iterations. The answer to questions at this level requires complex cognitive tasks, as it requires the expansion of the most advanced higher thinking processes, which are complex logical thinking, planning and thinking, which often requires an extended period of work. In questions at this level, the cognitive requirements are very high, and the solution processes are characterized by a great degree of complexity, and the student is required to make many connections, link ideas to content within the content and choose a specific method from many of the available alternatives on how to solve the problem.

This great variation in the proportions obtained by each level of cognitive depth requires standing on it, to find out the reasons that led to this variation, and the reason for focusing on the questions of the first level (remembering and reproducing) by the drafters of the questions in the geographical books of the middle stage, and the researcher attributes this to the following reasons:

A- The authors of the geographical books for the preparatory stage did not pay much attention to the levels of cognitive depth when drafting book questions, because of the difficulty of achieving and measuring them among students, and the lack of interest by the book writing committees to cover all levels of knowledge. (Shehata, 1998, p. 15)

B- The reason may be that the authors of geographical books adopted a traditional orientation, that knowledge leads to a change in the student's behavior, that is, the student's frequent receipt of knowledge will lead to the training of their minds and the development of their intelligence. (Attia, 2013, p. 22) C- Emphasis by the book writing committees and the question maker on the goals that develop the preservation processes, and measure the students' ability to quantify the information they keep, and (the agent) believes that the goals must be comprehensive for all levels of knowledge, and precisely and clearly defined. (Al-Wakil & Mohammed, 2011, p.153)

### Conclusions:

In light of the research results, the researcher reached the following conclusions:

1- There is a great disparity between the availability rates of cognitive depth levels in the geographical books questions for the preparatory stage. The first level (remembering and reproducing) was available to a high degree, while the geographical books questions for the preparatory stage lacked for the second level (applying concepts and skills), the third level (strategic thinking), and the fourth level (extended thinking).

2- Weak attention to questions The level of strategic thinking, and the level of extended thinking, where the researcher believes that the reason is due to the difficulty of formulating this type of questions.

### Recommendations:

In light of the research findings, the researcher recommends the following:

1- Reviewing the questions of the geographical books of the preparatory stage, and including the levels of cognitive depth in reasonable and balanced proportions and convergence commensurate with the importance of each level.

2. Invitation to the Curriculum Directorate in the Iraqi Ministry of Education to pay attention to the questions of the geographical books of the preparatory stage, and to place them according to the levels of cognitive depth, in order to serve the educational process.

### Proposals:

To complement the research requirements, and in light of its results, the researcher proposes to conduct research aimed at:

1- Evaluating the social books' questions for the primary and intermediate stages according to the levels of cognitive depth.

2- Developing social and geographical books at different stages of study in light of the levels of cognitive depth.

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