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The level of representation of some learning styles in the content of Mathematics books for the 4th preparatory class (analysis - evaluation study)

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Abstract

The present research aims at identifying the level of representation of some learning styles in the content of mathematics books for 4th preparatory (scientific and literary). In order to achieve the goal of the research and answer his questions, the researcher has adopted the descriptive research method and the content analysis method for the research sample. By using the content analysis card with indicators of virtual validity. It includes categories of analysis or axes of analysis and represents Learning methods and the their indicators according to the Filder - Silverman model of learning styles, which classified students' learning styles into several methods: (Sensing Learners vs Intuitive Learners , visual Learners vs verbal learners , inductive learners versus deductive learners , active learners vs contemplative learners, sequential learners versus holistic learners).
The researcher has conducted the content analysis process for mathematics books for 4th preparatory class (scientific and literary) according to specific steps and controls. To determine the level of representation of some learning styles, using frequencies and percentages. As the results of the analysis, it is obvious that the frequency totals for learning styles and their indicators are unequal, and the percentages of their representation level in the content of mathematics books for the 4th preparatory class (scientific and literary) are below the required level and this is realistic evidence that some students' learning styles have not been taken into consideration. The consideration when preparing mathematics books for the 4th preparatory class (scientific and literary). Therefore, the researcher recommends the need to pay attention to it and take into account the inclusion of all students 'learning methods when preparing mathematics curricula in particular and books in general.

Keywords: Content analysis method , Learning styles , school Mathematics books.

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1. Introduction

The most prominent attribute of our current era is the rapid and successive changes, multiple technological developments and the tremendous revolution in scientific discoveries in all branches of science and knowledge. Mathematics as a 7uy63science has been developing and expanding as well as mathematical discoveries are continuing in all its branches. So this expansion and development that appeared in the type and quantity of knowledge and mathematical expertise should be included in the content of its curriculum and in all educational stages in order to continue its role in preparing generations according to a meaningful philosophical vision. Putting the modern curricula or developing the current curricula in mathematics are very necessary for the requirements of the current era and the needs of individuals to prepare them for future life. It is a great educational responsibility that requires reconsideration of the content of mathematics courses in All academic levels, it is educationally accepted that the content cannot be developed in a spontaneous or improvisational manner . So, such experiences that included in the content of mathematics should be purposeful and well planned as well as they should be based on a set of foundations and standards, moreover, they are directly related to the goals previously defined in the curriculum. The question posed here is the same question that Spencer posed in (1860), "Which knowledge do we choose?".

This question is in fact no longer difficult for the majority of curriculum designers who consider the scientific material as a means and not an objective, so, any subject that could achieve the goal, it is valid and can be included in the curriculum. Therefore, the process of evaluating and analyzing the content of curricula and textbooks, including mathematics books, has become a necessary matter that should be done by those involved in developing these curricula and books to find out their suitability and relevance for what they were set for.

The current situation of curricula gives an unfulfilled picture of the aspirations for many mathematics books and their school curricula, a failure to achieve what they were set for, and they still need more development and renewal processes in line with the requirements of the era of informatics in which we live and the future we expect. What confirms the existence of this deficiency is the discussions of specialists in mathematics curricula and methods of teaching it about examination results, the nature and level of graduates, and the results of research and studies that dealt with textbooks in their various aspects. And their recommendations state that mathematics curricula should be subjected to more analysis and evaluation processes, in addition to the calls for reform that were launched in many seminars and scientific conferences, as the Third International Conference of the College of Education Ibn Rushd, held under the slogan (Educational Reform, an Educational Vision in Iraqi Education) on 4-52 / 4/2016 referred to the necessity of reviewing the school curricula and enriching them with thinking capabilities and skills (Republic of Iraq / Ministry of Higher Education, 2016).

The researcher also touched that shortcoming based on his experience in teaching mathematics textbooks, his meetings and his dealings with secondary education students; especially fourth preparatory class students, the best person who appreciates the effectiveness of the curriculum content is the learner, at least in terms of ease, difficulty and the harmony of this content with his abilities and desires, and whether the content of curricula meets with his needs or not or it can arouse his excitement and stimulate his desire to learn easily. The learner can also determine which the materials that are not of the same usefulness in his daily life and in his subsequent studies and those that are higher than his ability to acquire and understand, and on the contrary, with regard to subjects and activities that are consistent with his ability and compatible with his desires and inclinations. And when we neglect the role of the learners in the development process, we ignore the most important side that concerned with the curriculum because its content is intended for them in

order to achieve their growth and build their personalities, so it is in the interest of the curriculum to take into account the opinion of the learners in order to ensure that it will be effective and feasible [18]. Understanding how students learn and taking into account their learning styles is a fundamental factor in the success of the teaching and learning process, so, those who are in charge of preparing and implementing curricula should take this into account [12], and the qualitative teaching methods enhance and increase the learning occurrence [27].

The researcher believes that mathematics textbooks for the fourth preparatory class still do not take into account some of the student's learning styles as well as the included learning methods may be unbalanced and their content needs more evaluation and development processes. It is worth mentioning here that the style of analyzing the educational content of the textbook enables the researcher to give an accurate description of what scientific facts and concepts the textbook contains. Besides, the process of analyzing textbooks aims to develop the elements of the curriculum such as (selection of educational goals and educational aids, methods of evaluation and teaching methods) to the extent that suites the psychological needs of students, their mental and skillful abilities, their social needs, and then help them to build their integrated personality in all respects that enables them to cope with and adapt to their societies [14].

Moreover, the style of analyzing the educational content of the textbook is a diagnostic and therapeutic process at the same time, leading to curriculum development and improvement of textbooks. It is useful for understanding the content of books, and clarifying the means and activities in them, which increases the effectiveness of its use in the teaching process [9], where the researcher assumes that the use of the content analysis method in the research enables him to stand at the level of representation of some students' learning methods in the content of the mathematics book for the fourth preparatory class, therefore; the current research problem is determined by the following question: (What is the level of representation for some learning styles in the content of the mathematics book for fourth preparatory class?).

2. The Importance of the Study

The current study is an objective response to the recommendations and proposals of many previous educational researches and studies that have focused on:

- The importance of the preparatory stage as it is an important stage of learning during which students are prepared for their future life by providing appropriate curricula that contribute in growth and integration of their personalities in all aspects.
- The need to develop curricula and textbooks for school subjects in general and mathematics textbooks in particular and subject them to continuous processes of evaluation and analysis of their content to meet the future needs of the individual and society and keep up with the era developments and modern global systems since the content analysis process is considered as a diagnostic and therapeutic process that leads to the development of curricula, and improving the level of textbooks, therefore; all countries of the world subject their curricula, represented by textbooks, to continuous analysis processes that aim at improving and developing them and identifying the strengths and weaknesses of their content.
- The present study an objective analysis tool through which the content of the mathematics textbook is analyzed for fourth preparatory class students, which is one of the books recently issued by the Ministry of Education and according to the knowledge

of the researcher mathematics textbook did not undergo a previous content analysis process according to learning methods .provides

3. The Objectives of the Study

The aims to identify the level of representation of some learning styles of mathematics books for fourth preparatory class (analytical - evaluation study) , by answering the following questions research :

1. What are the learning methods that should be met in the content of the mathematics book for the 4^{th} preparatory class (scientific – literary)?
2. What is the level of representation of learning styles in the content of the mathematics book for the fourth preparatory class, with its two branches (scientific – literary)?
3. What are the distribution of learning styles in the content of the mathematics book for the fourth preparatory class, depending on its two branches (scientific- literary)?. Through testing the validity of the following null hypothesis:

There are no statistically significant differences between the frequencies of students' learning styles in the content of the mathematics book for the fourth class for the scientific branch and the frequencies of student learning styles in the content of the mathematics book for the fourth class for the literary branch "

4. The Research Limits

The present research is determined by:

1. The content of mathematics books for the 4^{th} preparatory class in academic education in both scientific and literary branches, twelfth edition of 2019. Approved by the General Directorate of Iraqi Curricula for the students of the 4^{th} preparatory class, where the whole content was subjected to analysis except pages of title, chapter titles, introduction and the list of contents.
2. Learning styles according to the Felder - Silverman Learning Style Model, where this model classifies students into the following categories :

- Sensing Learners vs. Intuitive Learners.
- Visual Learners vs. Verbal Learners.
- Inductive Learners versus deductive Learners.
- Active learners versus Reflective learners .
- Sequential Learners versus Global Learners.

5. The Definition of the Terms

a- Analysis of Content

- [22] defines content analysis as: "A method of scientific research in order to arrive at a quantitative and structured description of a content that describes the content in an organized manner.
- For [13] It is the identification of basic elements that make up the scientific material that is being analyzed.
- According [12] It is defined as a method of scientific research that falls under the descriptive research method and its purpose is to know the characteristics of the communication material or textbooks, and to describe these characteristics in a quantitative description expressed in quantitative symbols in addition to the results obtained by other methods that are indicators that determine the direction of the required development.

The researcher defines it procedurally: a method of scientific research that adopts the descriptive research method and the method of quantitative description of the content of the mathematics book for the 4^{th} preparatory class by using frequencies and percentages after analyzing the content of mathematical subjects in the light of the list of learning methods (analysis unit) prepared by the researcher for this purpose.

b-Textbook

- [17] defined it as: "the publication, the manuscript, or the document approved by the jury supervising education, which is a basis and guide for the teacher in achieving his educational role and as a basis and guide for the learner in his learning and success."
- [14] consider it as: "An effective tool in the educational process, as it is the teacher's guide and the main reference for the student to receive information and it determines the method of teaching that suits the material."

The researcher defines it operationally: What was chosen or determined by the authors in the Curriculum Directorate of various mathematical knowledge formed with skill aspects and other sentimental aspects, the educational content of mathematics books for the fourth preparatory class in its two branches (scientific and literary) and approved for teaching the fourth preparatory class students in the academic year 2019-2020, which is to be analyzed and evaluated by the researcher according to the list of specific learning methods in the present research.

c-Learning styles

- Gregorc (1975) believes that "the learning style consists of a set of characteristic claims of the learner that are evidence of the learner's learning method and the way he receives the information from the surrounding environment in order to adapt with it [32].
- For [24], the learning styles are described as "the method that used by the individual in the treatment of educational and social problems depending on his own experiences and knowledge as well as the external environment could affect the method that the learner uses to solve any problem he faces during educational situations". [33]

- Learning styles are defined by [31] as "the way the learner uses to think, it is not an ability, but a way to use that ability. That is why we do not have one specific pattern ,rather, there are different learning styles for learners in spite of their being equal in the ability. Our understanding of the patterns helps us to know why some individuals succeed in certain activities, whereas others fail, and this success depends on their patterns, not on their capabilities [31].

The researcher defines the learning style as the specific method that preferred by the learner over the others in his learning process, which shows the characteristics of the learner and determines how he receives the educational content (information and mathematical concepts) and perceives it, how he processes it and deals with it (the processes of observation and thinking) that he performs and how he represents, acquires and retains it in his memory and how to employ it and try it in other similar situations.

d-Preparatory stage

It begins after the intermediate stage, which is three levels (fourth - fifth - sixth). In the preparatory stage, the study is divided into two branches (scientific and literary) and concerned with continuing to provide students with knowledge, mastery of skills and the foundations of trends towards achieving their integration as well as it prepares them for productive and practical life and enrollment in colleges and institutes [39].

6. Theoretical Aspects

Preface:- Forming the accurate definition of mathematics as a science is not an easy task, because mathematics is a very broad science, rather that each of its branches grows and expands with time to the extent that it is difficult for the non-follower to take note of the breadth of this or that branch. Great changes and vast leaps have been in mathematics. This development was not limited to the growth and increase in the branches of mathematics, but was accompanied by the development and change in the quality and quantity of mathematics that the mathematics curriculum must deal with in the school stages in order to continue its role in providing individuals with a meaningful education. The term modern mathematics is related to school mathematics curricula, modern mathematics is presented within modern curricula that meet the era requirements and the needs of individuals and employ educational technology and diversify methods of presentation and approach the student's environment and appear attractively and organize the material logically and psychologically. This matter, i.e. writing mathematics curricula, is not an easy matter and does not follow the author's temperament. Rather, whoever assumes the responsibility of writing mathematics curricula must return to a number of national and international references to be guided by them and organize the curriculum in line with their ideas, as the modern curriculum must go beyond the limits of the academic curricula to include all educational experiences (classroom and non-descriptive) to which the student is exposed, and which the school plans, supervises and evaluates. [15].

Psychological studies in this field have shown the necessity of multiple fronts of success in the curriculum, and this is done if the curriculum includes an appropriate number of various aspects of activity, which helps all the learner to find in him what suits his preparations and needs, and finds the opportunity available to him in order to achieve success, instead of that the curriculum focuses its attention on the academic aspects alone, which makes a small group of academically prepared people monopolize success while the rest of the students feel the bitterness of failure and failure [35].

Whereas modern education has realized the importance of satisfying students 'needs, so it has taken care of that through the school curriculum, in order to properly direct students' behaviors and to avoid satisfying them in a deviant manner, as it is imperative to satisfy the needs of students on

the curriculum's authors. Then, building the curriculum in a way that enables it to meet those needs and satisfy them in a way that satisfies the learners and does not contradict the norms and values of society, because neglecting the needs of the learners will lead to problems that hinder learning, and push the learners to aversion to the curriculum and their lack of interest in it. [20]

The trends share with the needs and tendencies in guiding the behavior of individuals in various situations, which make them of great importance in the life of the learner and society. The curriculum should emphasize the development of new trends among learners that require the scientific and technological development [23].

As for the role of the curriculum in the development of the beneficial tendencies, the curriculum should satisfy the aspirations of the learners in a way that leads to the generation of new tendencies in different fields, and linking such tendencies with the needs, capabilities and preparations, and using them in developing the capacity for creativity and innovation.[20]

Also, the role of the curriculum in developing the capabilities of learners lies in focusing on some mental capabilities that benefit the learner. The curriculum works to discover the capabilities and preparations of each learner through the lessons and accompanying activities provided to them and to create the appropriate conditions for the development of these capabilities and preparations, so, the curriculum should be planned, designed and implemented according to the capabilities, preparations of the learners and their needs [28]. The textbook is a curriculum tool, an important element and a foundation in the educational process, complementing other elements, and the learner's slogan, so it must be taken care of in terms of content, output, size, and clarity, to suit the age for which it is set, and it must contain accurate, reliable, clear and supported scientific content with examples and evidences. Moreover, it should include recent information, questions, applications, activities, and exercises, and to push the learner to research and it should be authored by specialists in authorship, and the book, in its form and artistic output, must attract the interest and passion of learners. (ibid: 320)

The content represents the paragraphs of the scientific material included in the textbook, and the teacher teaches them to students to obtain the required learning. The content represents one of the elements of mathematics curricula that includes educational experiences of information, skills and trends that would achieve the goals of the curriculum [16].

The experiences that included in the curriculum content must be targeted, planned and based on a set of foundations and standards:

- The content must relate to the educational goals and achieve them.
- The content must be compatible with the realities of life and keep pace with the successive scientific and cultural developments.
- There should be unity, harmony and complementarity among the educational subjects.
- The content should be arranged and constructed in the different years of study.
- Emphasis on experiences that teach students scientific thinking methods and research methods more than paying attention to fragmented knowledge and detailed information.
- Complementarity between the theoretical and the practical side, i.e. between science and work [5].

6.1. There are Reasons for Developing the Curriculum

- Filling the curriculum with information at the expense of taking care of thinking methods and solving problems.
- Social and economic developments in society, which requires reviewing the current curricula to be in line with these developments and to help young people in keeping pace with these developments.
- The development of human knowledge, which made it necessary to review the contents of the curricula in terms of quantity and quality in the light of developments in the fields of human knowledge.
- Curricula and teaching methods fail to keep pace with contemporary global developments and the increased need of society and the labor market for a highly qualified workforce.
- Benefiting from the results of curriculum evaluation to avoid shortcomings and develop curricula [28]
- The studies that concerned with scientific research methods have indicated that there is a debate about content analysis, and its position among scientific research methods. There are those who see that content analysis is one of the methods of scientific analysis, and their argument is that it is a method that has procedures that distinguish it from other research methods, and there are those who see it as a descriptive research method because its purpose is to describe the apparent content and to show its properties and components [12].

6.2. Methods of Content Analysis

There are two methods of content analysis that are considered the most commonly used:

- The first: It is based on the grouping of similar elements in the course material into one group, such as (facts, concepts, terms, generalizations, values, trends and skills).
- The second: It is based on dividing the material into main topics, then dividing them into other subsections [19].

6.3. The Importance of Content Analysis

Content analysis is one of the descriptive research methods that deals with communication material as topics for the purposes of scientific research. It is a research method and not an objective in itself. It deals with the study material and describes it qualitatively and quantitatively, and the importance of content analysis as a systematic method for the curriculum appears in:

- Identifying the extent to which the content represents the curriculum.
- Enriching the textbook content in terms of its quality and degree of novelty as well as providing it with valuable scientific knowledge.
- Identifying strengths and weaknesses in school curricula and textbooks Making judgments about educational outcomes [15]

6.4. Learning of Styles

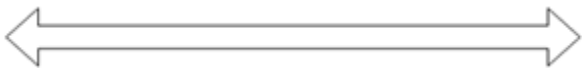
The most important influence of the humanistic school in psychology on educational thought lies in its emphasis on the individuality of the learners. As a result of this effect, there has become a general perception that different people have different learning needs and the individuals fetch their own knowledge, experiences and resources into the learning process and learn in different ways. It is therefore imperative for both teachers and trainers to be aware of these different potential learning styles and try to respond to as many of them as possible when planning programs. [21] The term learning styles used by specialists in education and psychology alike refers to the intermediate and various processes that the learner uses in different situations during his interaction with learning situations that lead him to new educational experiences that are added to his cognitive repertoire. (Entwistle, 1981) and the most important of these methods is what is known as the "Felder-Silverman" model, which was formulated by Felder in cooperation with "Linda Silverman" to be used by teachers and students in the faculties of Engineering and Science, as it was applied after that in several fields [21].

6.5. Felder - Silverman Learning Style Model

This model classifies students into the following categories :

- Sensing Learners (eyes, pragmatic, and action-oriented) versus intuitive Learners (conceptual, creative, and oriented toward theories and meanings).
- Visual Learners (prefer visual representations of the material presented - images, diagrams, and flow charts) versus Verbal Learners (prefer written and spoken explanations).
- Inductive Learners (prefer the presentation that goes from the specific to the general) versus the deductive learners (they prefer presentation that goes from the general to the particular).
- Active learners (learn by trying things and working with others) versus reflective learners (learn to think about things a lot and work alone).
- Sequential Learners (linear, structured, and learning in small progressive steps) versus global Learners (holistic, systems thinkers, and big leaps learning).

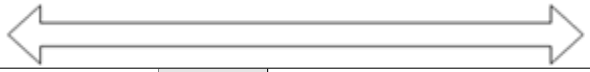
The Learning Styles Index developed by Richard Felder in collaboration with Linda Silverman in the 1980s is one of the models widely used to describe learning styles. According to this model, which was revised by Felder in 2002, there are four dimensions of learning styles. (Far left) and the other (far right) [21].



Intuitive		*Sensory*
Sensory learners prefer sensory, practical, and procedural information and are searching for facts.		Intuitive learners prefer conceptual, creative, and theoretical information; they search for meaning.

Visual		Verbal
Verbal learners prefer to listen or read information and look for word explanations		Visual learners prefer diagrams , images and layouts , and look for visual representations of information.

Active		Contemplative
Reflective learners prefer to think about things, evaluate choices, learn to analyze, and have an understanding of the problem on their own.		Active learners prefer to manipulate things by hand, do natural experiments, learn by trying, and enjoy working in groups to understand problems.



Consecutive		Holistic
Holistic learners prefer an approach that is holistic and systematic, seeing the big picture first, and then filling in the details.		Consecutive learners prefer to have information presented in a written and structured manner and put the details together in order to understand the big picture that emerges.

Chart (1) illustrating the Filder - Silverman index of learning styles

It is worth mentioning here that the researcher has adopted all types of learners in the Filder - Silverman model for learning methods when preparing the content analysis card in the current research because he believes that it should be represented in the content of mathematics books for the fourth preparatory class in its two branches (scientific and literary).

7. Previous Studies

- [30] Study, It aimed to know the effect of using the (4Mat) system based on the principles of learning methods in teaching for the various disciplines of higher education and the participants in the (Sotl) project such as the Teaching and Learning Grant at Central Connecticut State University in North America. Likert Scale was applied applied to students in higher education, and the results showed the effectiveness of using the 4Mat system in improving learning.

- [31] Study: It aimed at identifying the extent to which the developed mathematics courses contributed to develop the higher thinking patterns for the students of the intermediate stage in the Kingdom of Saudi Arabia. To achieve the goal of the s-tudy, the researcher chose the descriptive and analytical approach as the curriculum for the study, and the study sample consisted of all the questions attached in the student's book that presented at the end of each lesson and the end of each chapter of the mathematics course for the first intermediate grade, and to achieve this, the researcher built a list to analyze the content of mathematics curricula in the light of the higher thinking skills, which included creative thinking, critical thinking and mathematical thinking, and the tool was applied to the developed mathematics text-book for the first intermediate class in its two courses: first and second, the study concluded that the mathematics course for the first intermediate class contributes to an appropriate degree in the development of creative thinking, with a medium degree in the development of critical thinking, a high degree in the development of mathematical thinking, and a very high degree in the development of thinking skills as a whole.

- [8] Study: It aimed at analyzing computer books for the intermediate stage according to the learning patterns and preparing a teacher's guide for computer books for the intermediate stage. According to learning styles. The research community identified all computer books for the intermediate stage represented by the computer book for the first intermediate class and the computer book for the second intermediate class, from which the questions and activities were chosen from the two computer books for the intermediate stage (sample for research), and the descriptive analytical research method was adopted, and the study tool consisted of a list of content analysis according to the McCarthy formats model for the four learning styles, which are (imaginative, analytical, logical, and dynamic), the analytical results showed a variation in the distribution of the four patterns according to McCarthy's 4-MAT form in the computer-written content of the intermediate stage, and the order of the four types of the two books (logical, analytical, dynamic (Imaginative)) arranged in descending order, and the occurrences of the four patterns in the book of the first intermediate class were more than the occurrences in that of the second intermediate class. According to the research results, the researcher recommended the necessity of developing the content of computer books for the intermediate stage according to McCarthy's learning styles and providing the teacher's guide for the computer books for the intermediate stage.

7.1. Comparing the Current Study with Previous Studies

1. The aim of the study: The objectives of previous studies varied according to their problems, so (Al-Harbi, 2013)study aimed at identifying the extent to which the developed mathematics courses contributed to the development of higher thinking patterns among the students of the intermediate stage in the Kingdom of Saudi Arabia, whereas [8] study aimed at analyzing computer books for the intermediate stage according to the learning styles and preparing the teacher's guide for computer books for the intermediate stage. According to the learning styles, the current research aims at identifying the level of representation of some learning styles in the content of mathematics books for the fourth preparatory class in its two branches (scientific and literary).

2. Research methodology :The present study agrees with this group of previous studies in its adoption, the method of content analysis and the descriptive approach as the appropriate approach for this study.

3. The research tool : The present study agrees with most of the previous studies in using the analysis unit, Where the unit of the topic or the idea is defined as a unit of the analysis, and the unit of the idea may be a sentence or a phrase that includes the idea around which a topic revolves.

4. Statistical means : The current study agrees with this group of previous studies in the use of a number of statistical means, such as the percentage of the number of occurrences observed for the unit of analysis as well as the Holste equation and others.

7.2. Advantages of the Previous Studies

- Determining the theoretical framework for the research.
- Knowing the sources and references that mentioned in these studies.
- Knowing the procedural steps of the research (steps in the process of content analysis and building the used tool .
- In discussing the results and interpreting them results.

- In developing research recommendations and proposals.
- Determining the appropriate statistical means.

8. Research Methodology

The researcher adopted the method of content analysis to achieve the goal of his research and answer his questions, the method of content analysis is one of the methods of the descriptive research, providing an accurate description and expressing the studied phenomenon qualitatively and quantitatively, and it is a research method whose purpose is to conclude through systematic, quantitative and objective diagnosis according to criteria that specified in advance. (Melhem, 2006: 369)

As the process of content analysis is a diagnostic and therapeutic process that leads to the development of the book, it is an organized and accurate description of the content of written texts, and the content is usually analyzed by answering the specific questions that are formulated in advance, so that answering these questions contributes in describing the content of the studied material and classifying it in a form that helps show the relationships and interconnections between the parts of the text. [23]

9. Defining the Research Community and its Sample

The research community is represented by the content of mathematics books for the preparatory stage in academic education. In intention style, the research sample was determined by the content of mathematics books only for the fourth preparatory class in academic education in its scientific and literary branches approved by the Iraqi Ministry of Education / General Directorate of Curricula / Twelfth Edition of 2019. The two books are the first link in the series of new mathematics books for the students of the preparatory stage, and Table (1) explains some details about the research sample.

Table 1: The research sample

Class and Branch	No. of pages in the book	No. Chapters	No. Chapter	Topic	Pages of content	Potential importance	No. pages of book		Percentage of controlled pages
							Controlled	Expectant	
4^{th} scientific	157	7 chapters	1^{st}	Mathematical logic	4-20	11.2%	16	1	94.12%
			2^{nd}	Equations	21-39	12.5%	18	1	94.74%
			3^{rd}	Indices and Roots	40-57	11.8%	16	2	88.89%
			4^{th}	Trigonometry	58-88	20.4%	29	2	93.55%
			5^{th}	Vectors	89-108	13.2%	18	2	90%
			6^{th}	Analytic Geometry	109-134	17.1%	24	2	92.31%
			7^{th}	Statistic	135-155	13.8%	19	2	90.48%
		Total			152	100%	140	12	92.11%
4^{th} literary	112	5 chapters	1^{st}	Real functions	4-22	17.7%	18	1	94.74%
			s^{nd}	Equations and Inequalities in R	23-42	18.69%	18	2	90%
			3^{rd}	Trigonometry	43-62	18.69%	19	1	95%
			4^{th}	Analytic Geometry	63-75	12.15%	12	1	92.31%
			4^{th}	Statistics	76-110	32.71%	34	1	97.14%
		Total			107	100%	101	6	94.39%

10. The Research Tool (the Content Analysis Tool) According to the Following Steps

i. Preparing a preliminary list of the analysis categories or the axes of analysis represented by learning methods according to the Filder-Silverman model for the learning

methods that must be available in the content of mathematics books for fourth preparatory class after reviewing the educational literature related to the learning styles of students in the preparatory stage and some previous studies that closed to the present study, such as: (Akram, 2017)Study and (Abd, 2019)Study, in which the learning methods were identified, the Filder-Silverman model for learning styles and indicators that indicate them, in a list, Appendix No. (2).

ii. To verify the validity of the analysis list, the researcher adopted a logical examination of it by presenting it to the jury (a group of referees with a specialization in curricula and teaching methods), Appendix (1) and taking their notes into account that focus on:

To reformulate some of the sub-indicators of the approved learning styles.

- Eliminating some of the sub-indicators of some learning styles, being duplicate in their content.
- In general, the list covers all the methods of learning to be analyzed according to the content and it is valid in its content to the job for which it is prepared. With this procedure, the validity of the list is apparently verified.

11. Preparing the Analysis Card

According to the analysis list, the researcher has prepared a content analysis card, Appendix (2), to be used in analyzing the content of mathematics books for the 4^{th} preparatory class (scientific and literary).

12. Analysis Procedures

The procedures for analyzing the content of mathematics books for the fourth preparatory class were carried out in its two branches (scientific and literary), as follows:

A- Determining the goal of content analysis:- which is to determine the level of representation of some learning methods in the content of the mathematics book for the fourth academic preparatory class.

B- Analysis process rules:- where the analysis process is governed by the following rules:

- The analysis process was carried out in the light of the specified content only, which is the content of mathematics books for the fourth preparatory class with its two branches (scientific - literary), with the exception of pages (title and chapter titles, introduction, list of contents) of the analysis.
- Determining the axes of analysis: Defining the axes of analysis in the current research with (8) learning methods and their indicators.
- Determining the unit of analysis: the unit of the topic or the idea has been identified as a unit of analysis, and this unit is the most important unit of content analysis, and the unit of idea may be a sentence or phrase that includes the idea around which a topic revolves, and the topic may be a simple sentence or an idea revolving around a specific issue (Mohammad and Reem, 2012: 164),They are used in most research for their appropriate size, and they are of two types (either explicit or implicit).

- Determining the count unit: it is the number of observed occurrences of the unit of analysis.
- Approving the analysis card, Appendix (2), to unpack the results of the analysis process.

C- The steps of the content analysis process:

1) Reading all content very carefully and accurately to know the main topics in the material, so reading contributes in determining the content that contains the idea, and clearly reveals the connotations of the topics and the ideas that make up each of them.
2) Extracting explicitly and clearly what is contained in the content of each topic (specifying phrases and sentences that indicate learning styles or their indicators).
3) Re-read each paragraph to form an image in the mind of the analyst in order to know the basic idea.
4) Fixing paragraphs that contain an idea (refer to one of the learning methods), counting them and recording them mathematically in the monitoring list.
5) Unpacking the results of the analysis, and this is done by giving a repeat for each one in the analysis card prepared to monitor the results .And then calculate the sum of iterations for each learning method and calculate the percentages for them.

13. Stability of Content Analysis

To control the subjective factors that could affect the results of the research and to provide the condition of objectivity in it, the matter required verification of the stability of the analysis process, and it means consistency that if the analysis is repeated again on the same sample even if the analyst and time differ, we will obtain the same results.(Al-Nimr, 2008: 77), where the researcher adopted two methods to verify the reliability of the analysis in the current research:

1- **consistency and stability of the analysis over time:**

The researcher repeats the process of analyzing the specific content itself after a period of time, as some chapters of the content of mathematics books for the preparatory fourth class were determined and re-analyzed two weeks after the first analysis and by applying the Holisti equation (Toaima). (2004: 226) to calculate the reliability coefficient, where the reliability coefficient reached (93.0) between the two analyzes, and Table (2) shows the results of the calculation of the reliability coefficient of the analysis over time.

Table (2): Results calculating process of the reliability factor analysis over time

Table (2) reflects that the percentage of agreement between the first and second analyses was 0.961, which is a high percentage indicating the stability of the analysis process over time.

2: Stability with different analysts.

It is a re-analysis by another analyst or other analysts for the same material and the same sample, and the two analyses are compared [12]. To calculate the stability with different analysts, the researcher follows the following steps:

- Informing the analysts about the mechanism of the analysis process and providing them with a copy of mathematics books for the 4^{th} preparatory class, the scientific and literary branches, and specifying a sample of (20%) of the content in line with what a number of theorists indicate that the number of members of the academic sample in descriptive research is (20%). (Melhem, 2000: 274).

Table 2: Results calculating process of the reliability factor analysis over time

Content sample		Learning methods	Analysis in 1st time	Analysis in 2nd time	No. agreement points	Holisti coefficient for consistency
Branch	Topic					
Scientific	4th chapter (Trigonometry)	Sensual	6	6	6	1
		Intuitive	3	4	3	0.86
		Visual	32	33	32	0.99
		Verbal	37	34	34	0.96
		Inductive	14	13	13	0.96
		Deductive	17	18	17	0.97
		Active	4	3	3	0.86
		Contemplative	6	4	4	0.8
		Sequential	11	12	11	0.96
		Holistic	2	3	2	0.8
Total			132	130	125	0.954
Literary	5th chapter (Statistics)	Sensual	3	5	3	0.75
		Intuitive	3	4	3	0.86
		Visual	28	28	28	1
		Verbal	34	34	34	1
		Inductive	15	13	13	0.93
		Deductive	20	21	20	0.98
		Active	5	5	5	1
		Contemplative	4	5	4	0.90
		Sequential	11	12	11	0.96
		Holistic	3	1	1	0.5
Total			126	128	122	0.961

- Applying the Holisti equation to calculate the stability coefficient statistically between the results of the researcher's analysis and the results of the analysis of the analysts separately, as well as calculating the reliability coefficient between the results of the analysts together, as the results indicated, Table No. (3) that the coefficient of stability between the researcher and the first analyst is (95.0) And between the researcher and the second analyst (91.0), as for the stability coefficient between the first and second analysts, its value was (93.0), which is high rates of stability, as the literature indicates that the stability ratio of more than (75%) is considered high. (Samara et al., 1989: 116). The reliability of the analysis is acceptable in relation to the literature that determined the reliability of (70% or more) is considered good. (Scott, 1969: 17).

3. Statistical means:

1. *The (SPSS) statistical analysis program was used to analyze, compare and understand the data* .
2. *Holisti equation*: used to find the reliability coefficient for analysis between the researcher and another researcher. $C.R = \frac{2M}{N1 + N2}$
3. *Chi square equation*: used to find the Results in this research. $x^2 = \sum \frac{(0-E)^2}{E}$
4. Also, the researcher used the percentage to determine ratios [12].

14. Presentation and Discussion of Results

4.1.1 Results related to the first question, which states the following: "What are the learning methods that should be available in the content of the mathematics book for the fourth grade of middle

Table 3: Results of the process of calculating the reliability factor of the analysis according to different analysts

Content sample		Learning methods	1st Analyst Analysis	Researcher analysis	No. agreement points	Holisti coefficient of consistence	2nd Analyst Analysis	Researcher analysis	No. agreement points	Holisti coefficient of consistence
Branch	**Topic**									
Scientific	4th chapter Trigonometry	Sensual	4	5	4	0.89	6	5	5	0.91
		Intuitive	3	4	3	0.86	5	4	4	0.89
		Visual	30	28	28	0.97	26	28	26	0.96
		Verbal	32	34	32	0.97	35	34	34	0.99
		Inductive	14	13	13	0.96	14	13	13	0.96
		Deductive	18	21	18	0.92	19	21	19	0.95
		Active	8	5	5	0.77	7	5	5	0.83
		Contemplative	3	5	2	0.5	6	5	5	0.91
		Sequential	9	12	9	0.86	10	12	10	0.91
		Holistic	3	1	1	0.5	1	1	1	1
Total			124	128	115	0.91	129	128	122	0.95
Literary	5th chapter Statistics	Sensual	7	6	6	0.92	6	5	5	0.91
		Intuitive	5	4	4	0.89	4	4	4	1
		Visual	29	33	29	0.94	29	28	28	0.98
		Verbal	33	34	33	0.99	33	34	33	0.99
		Inductive	15	13	13	0.93	16	13	13	0.9
		Deductive	17	18	17	0.97	23	21	21	0.95
		Active	5	3	3	0.75	3	5	3	0.75
		Contemplative	6	4	4	0.8	6	5	5	0.91
		Sequential	9	12	9	0.86	15	12	12	0.89
		Holistic	0	3	1	0.67	2	1	1	0.67
Total			126	130	119	0.93	137	128	125	0.94

school in its two branches (scientific - literary)? Where the answer to this question was by preparing a list of learning methods and indicators indicating them according to a model Felder - Silverman Learning Style Model, an appendix (2) , where the list of learning styles included classifies students into the following categories:

- Sensory Learners versus intuitive Learners.
- Visual Learners vs. verbal Learners.
- Inductive Learners versus deductive Learners.
- Active learners versus contemplative learners.
- Sequential Learners versus Holistic learners.

4.1.2 The results related to the second question, which states: "What is the level of representation of learning styles in the content of mathematics books for the fourth preparatory class in its two branches (scientific - literary)", where the answer to this question was through the process of analyzing the content of mathematics books for the fourth preparatory (scientific -literary) according to the content analysis card prepared for this purpose, Appendix (2) where the researcher used (Frequency Calculation) as a unit for the census and the percentage to know the level of representation of each learning style and its indications according to the Felder - Silverman Learning Style Model and since the strength of the emergence and confirmation of each of the learning styles can be determined by the number of occurrences of its appearance, and this is one of the methods of counting and a means for finding the quantity in content analysis [7]. Where the results of the process

of analysis and calculation of frequencies and percentages of learning methods and their indicators in the content of mathematics books for the fourth preparatory class (scientific - literary) as follows:

4.1.2.A. The results of the process of analyzing the content of the mathematics book for the fourth preparatory class, the scientific branch: The content of the mathematics book for the fourth grade of middle school, the scientific branch, was analyzed using the content analysis card, appendix (2). Which included some learning methods and indicators indicating them according to (Filder - Silverman model) for learning styles and calculating the sum of iterations and percentages of each method and its indicators, as in Table (4):

The results of the content analysis process, Table No. (4) showed that the learning methods and their indicators in the content of the mathematics book for the fourth preparatory class, the scientific branch, were distributed according to the frequencies and percentages as follows:

The method of (deductive learning) obtained a total of (315)repetitions a percentage of representation amounted to (25%), then the method of (the verbal learner) with a total of (167) iterations and a percentage of the representation amounted to (13%), then the method of (the sequential learner) with a total of (161) repetitions and a percentage of representation amounted to (13%), then the learning method (the intuitive learner) with a total frequency of (157) iterations and a percentage of representation amounting to (12%) , then the learning method (sensory) with a total frequency of (115) repetitions and a percentage of representation amounted to (9%), then the learning method (visual) with a total of (101) iterations and a percentage of representation amounted to (8%), then the learning method (active) with a total of (70) iterations and a percentage. The representation reached (5%), then the (contemplative) learning method with a total of (67) repetitions and a percentage of the representation amounted to (5%),then the (Inductive) learning method with a total of (66) repetitions and a percentage of the representation amounted to (5%) then the (Holistic or inclusive) learning method with a total of (57) repetitions and a percentage of the representation amounted to (4%) . And as in the chart (2).

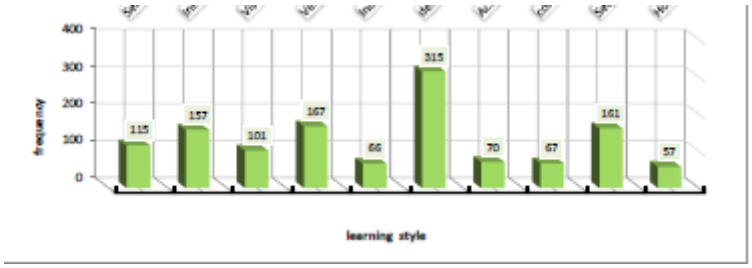


Figure 1:

Chart (2): shows the level of representation of learning styles in the content of the mathematics book for the 4th preparatory class, the scientific branch, repetition is calculated.

Table 4: The results of the process of analyzing the content of the mathematics book for the 4th preparatory class, the scientific branch, according to the frequency of learning methods and their indicators.

No.	Learning methods	indicators	Repetitions in content							Vertical total of repetitions	Percentage
			1st	2nd	3rd	4th	5th	6th	7th		
1	Sensual	Sample information (description of figures, results of experiments and practical demonstrations)	1	1	2	3	6	3	7	23	9%
		Algorithms for solving mathematical problems and clarifying abstract concepts using numerical examples	3	4	6	3	7	6	7	36	
		Exercises that require the use of natural comparisons and practical demonstrations to clarify the quantities of the calculated quantities and require memorization, routine calculations, and the use of a manual calculator.	2	0	2	18	3	1	5	31	
		Examples related to real life.	2	2	1	9	1	2	8	25	
		Horizontal Total	8	7	11	33	17	12	27	115	
2	Intuitive	Conceptual information such as theories, mathematical models, and material that emphasize basic understanding .	5	2	6	9	7	4	8	41	12%
		Use an algebraic example to illustrate abstract concepts or algorithms to solve mathematical problems.	6	9	7	23	6	8	17	6	
		Exercises that allow discovering the relationships and interconnections between mathematical concepts.	7	1	2	4	1	11	0	7	
		Exercises and problems that are somewhat complex and surprising, and depend on understanding and creative thinking, and require unfamiliar patterns and methods for solution .	5	0	1	0	0	0	0	5	
		Topics that are presented by being satisfied with abstract mathematical formulas without explaining the details.	0	0	1	1	2	0	4	0	
		Horizontal Total	23	12	17	37	16	23	29	157	
3	Visual	Clarifying mathematical concepts and facts through illustrations, diagrams of shapes, arrow diagrams, drawing functions and inequalities, and representing them in the coordinate plane	3	17	7	6	19	13	1	66	8%
		Illustrate mathematical concepts and facts through tables, charts, concept maps, vector diagrams, and circular sectors.	9	8	4	0	1	0	0	35	
		Clarify mathematical concepts and facts through computer data and practical presentations.	0	0	0	0	0	0	0	0	
		Clarifying mathematical concepts and facts through: Presentations on videotapes or CDs of the course material.	0	0	0	0	0	0	0	0	
		Horizontal Total	12	25	11	6	20	36	13	101	
4	Verbal	Presenting the concept based on written explanations without abstract	8	2	2	1	4	1	8	26	13%

		mathematical drawings and formulas.									
		Verbal definitions of mathematical concepts and texts of theories and engineering theorems.	8	4	1	10	8	4	7	42	
		Notes and properties of geometric shapes.	7	3	1	14	4	11	14	54	
		Verbal mathematical questions and problems.	5	3	0	21	2	7	7	45	
		Horizontal Total	28	12	4	46	18	23	36	167	
5	Inductive	Questions and exercises that require a comparison and finding differences (what is the difference between ?	4	1	1	3	1	2	3	15	5%
		Exercises that call for reaching a general rule (giving a set of examples before giving the principle or general law .	3	5	4	0	0	2	0	14	
		Exercises and examples that require uncovering potential relationships (follow the pattern ..., what is the next issue….)	0	1	1	2	1	1	1	7	
		Exercises and examples that require making general decisions and judgments about a group of cases. Such as examples and exercises of the type (what do you conclude from the above….?	7	1	4	1	1	5	1	20	
		Matters requiring predictability.	6	0	2	0	0	2	0	10	
		Horizontal Total	20	8	12	6	3	12	5	66	
6	Deductive	Examples and exercises as an application of a general principle or law.	25	29	31	24	26	42	33	210	25%
		Exercises and questions that require practicing scientific debate with scientific evidence (deductive reasoning) and building scientific explanations, such as proof of the validity of theories through axioms, proving and proving the validity of some relationships and logical expressions.	9	8	8	2	4	8	2	41	
		Exercises and questions of the type (if .... then)...	11	7	4	8	14	15	6	65	
		Horizontal Total	45	44	42	34	44	65	41	315	
7	Active	Exercises and issues that require collaborative work in groups.	0	1	0	0	0	0	0	1	5%
		Exercises and issues that require practical experience and practice of research and discovery.	0	0	0	1	0	0	0	1	
		Exercises and issues that require measurement and evaluation, using special tools.	0	4	1	7	0	0	0	12	
		Exercises and issues that require the skill of organizing data and scheduling them in tables or representing them by drawing and examining the results.	4	6	9	6	7	5	17	54	
		Exercises that require writing a report on a specific topic and presenting it to the class.	0	0	0	0	0	0	0	0	
		Exercises, problems and puzzles that call for the discovery of the solution.	0	0	0	2	0	0	0	2	
		Horizontal Total	4	11	10	16	7	5	17	70	
8	Contemplative	Issues and exercises of the type(What is the relationship ..?, What is different…?	0	0	0	0	1	0	0	1	5%
		Questions and exercises of the type (give an example of ..?	3	2	0	0	0	0	0	5	

		Questions and exercises of the type (draw ...?,Complete the drawing of the figure or the scheme¶...	4	13	3	5	0	7	0	32	
		Reflection questions about the submitted material and its possible applications.	0	1	0	8	1	0	4	14	
		Questions that require submission of a subject seal with short summaries, final notes and expressions from the student himself.	3	5	0	2	1	0	4	15	
		Issues and issues that need the processes of brainstorming and visualization.	0	0	0	0	0	0	0	0	
Total Horizontal			10	21	3	15	3	7	8	67	
9	Sequential	Presenting the concepts in a sequential step-by-step manner.	4	6	5	8	15	7	8	53	13%
		Questions and exercises that encourage review and investigation of an issue that will be raised later. Linking issues and using previous experiences.	1	2	1	2	0	6	2	14	
		Exercises and questions that require following a fixed path or steps to a solution	9	8	9	6	17	33	12	94	
Horizontal Total			14	16	15	16	32	46	22	161	
10	Holistic	Examples and exercises that show the correlation between the educational material in the mathematical subjects, whether in the course or in other courses.	2	6	5	3	8	6	3	33	4%
		Mathematical issues that encourage the development of decision-making ability.	0	4	1	1	0	1	6	13	
		Exercises and questions that require giving a comprehensive idea, point of view, description and general perception.	2	4	0	1	1	0	3	11	
Horizontal Total			4	14	6	5	9	7	12	57	
The total number of repetitions										1276	100%

4.1.2.B. The results of the process of analyzing the content of the mathematics book for the fourth preparatory class, the literary branch. Using the content analysis card, Appendix (2). The content of the mathematics book for the fourth preparatory, the literary branch, was analyzed in the light of the learning methods and their indicators according to the Felder - Silverman Learning Style Model, and the calculation of the sum of the iterations and the percentages of each style of the learning styles shown in the analysis card. Table (5) shows the arrived results:

In Table (5), the results show that the learning methods according to the Filder-Silverman model and its indicators in the content of the mathematics book for the fourth preparatory class, the literary branch, that distributed in the order according to the frequencies and percentages as follows: The learning method (sequential) obtained a total frequency that reached (193) iterations and a percentage of (22%), then the learning method (deductive) by obtaining (162) iterations and a percentage of (18%), then the learning method (sensory) by obtaining (148) iterations and a percentage of (17%) Then the learning method (verbal) by obtaining (91) repetitions, which is represented by a percentage of (10%), then the learning method (intuitive) by obtaining (87) repetitions and a percentage of (10%),then the method of learning (inductive) by obtaining (49) iterations and a percentage of (6%), then the method of learning (holistic) by obtaining (45) iterations and a percentage of (5%), then the learning method (active) by obtaining (43) repetitions and a percentage of (5%), then the learning method (visual) By obtaining (36) iterations and a percentage of (4%) ,then the method of learning (contemplative) by obtaining (32) repetitions and a percentage of (4%). And as shown in the following chart(3).

Table 5: The results of the process of analyzing the content of the mathematics book for the 4th preparatory class, the literary branch, in the light of the learning methods and their indicators.

No.	Learning methods	Indicators	Repetitions in chapters content					Vertical Total of Repetitions	Percentage
			1st	2nd	3rd	4th	5th		
1	Sensual	Sample information (description of figures, results of experiments and practical demonstrations).	5	2	3	1	6	17	17%
		Algorithms for solving mathematical problems and clarifying abstract concepts using numerical examples.	6	8	24	19	26	83	
		Exercises that require the use of natural comparisons and practical demonstrations to clarify the quantities of the calculated quantities and require memorization, routine calculations, and the use of a manual calculator.	1	0	0	2	26	29	
		Examples related to real life.	0	0	8	0	11	19	
Horizontal Total			12	10	35	22	69	148	
2	Intuitive	Conceptual information such as theories, mathematical models, and material that emphasize basic understanding.	8	7	7	5	0	27	10%
		Use an algebraic example to illustrate abstract concepts or algorithms to solve mathematical problems.	6	9	7	3	0	25	
		Exercises that allow discovering the relationships and interconnections between mathematical concepts.	0	4	6	8	0	18	
		Exercises and problems that are somewhat complex and surprising, and depend on understanding and creative thinking, and require unfamiliar patterns and methods for solution,	0	2	0	0	0	2	
		Topics that are presented by being satisfied with abstract mathematical formulations without explaining the details.	0	0	8	4	3	15	
Horizontal Total			14	22	28	20	3	87	
3	Visual	Conceptual information such as theories, mathematical models, and material that emphasize	6	8	9	2	0	25	10%

		basic understanding.							
		Use an algebraic example to illustrate abstract concepts or algorithms to solve mathematical problems.	4	0	1	0	6	11	
		Exercises that allow discovering the relationships and interconnections between mathematical concepts.	0	0	0	0	0	0	
		Exercises and problems that are somewhat complex and surprising, and depend on understanding and creative thinking, and require unfamiliar patterns and methods for solution,	0	2	0	0	0	2	
		Topics that are presented by being satisfied with abstract mathematical formulations without explaining the details.	0	0	8	4	3	15	
Horizontal Total			14	22	28	20	3	87	
3	Visual	Clarifying mathematical concepts and facts through illustrations, diagrams of shapes, arrow diagrams, drawing functions and inequalities, and representing them in the coordinate plane.	6	8	9	2	0	25	4%
		Illustrate mathematical concepts and facts through tables, charts, concept maps, vector diagrams, and circular sectors.	4	0	1	0	6	11	
		Clarify mathematical concepts and facts through computer data and practical presentations.	0	0	0	0	0	0	
		Clarifying mathematical concepts and facts through: Presentations on videotapes or CDs of the course material.	0	0	0	0	0	0	
Horizontal Total			10	8	10	2	6	36	
4	Verbal	Presenting the concept based on written explanations without abstract mathematical drawings and formulas.	3	0	0	1	0	4	10%
		Verbal definitions of mathematical concepts and texts of theories and engineering theorems.	5	5	4	2	7	23	
		Notes and properties of geometric shapes.	6	9	8	4	19	46	
		Verbal mathematical questions and problems.	2	0	9	0	7	18	
Horizontal Total			16	14	21	7	33	91	
5	Inductive	Questions and exercises that require a comparison and finding differences (what is the difference between.؟.؟....	0	0	0	0	2	2	6%
		Exercises that call for reaching a general rule (giving a set of examples before giving the principle or general law).	0	7	1	6	0	14	
		Exercises and examples that require uncovering potential relationships (follow the pattern ..., what is the next issue (...	3	7	3	0	0	13	
		Exercises and examples that require making general decisions and judgments about a group of cases. Such as examples and exercises of the type (what do you conclude from the above.....?)	*4*	5	0	5	2	16	
		Matters requiring predictability.	*0*	4	0	0	0	4	
*H*orizontal Total			*7*	23	4	11	4	49	
6	Deductive	Examples and exercises as an application of a general principle or law.	8	43	33	28	29	141	18%
		Exercises and questions that require practicing scientific debate with scientific evidence (deductive reasoning) and building scientific explanations, such as proof of the validity of theories through axioms, proving and proving the validity of some relationships and logical expressions.	1	0	1	3	0	5	
		Exercises and questions of the type (if .... then.....)	*4*	2	3	7	0	16	
Horizontal Total			*13*	45	37	38	29	162	
		Exercises and issues that require collaborative work	*0*	0	0	0	0	0	5%

		in groups.							
		Exercises and issues that require practical experience and practice of research and discovery.	*0*	0	0	0	0	0	
		Exercises and issues that require measurement and evaluation, using special tools.	*0*	0	0	0	0	0	
		Exercises and issues that require the skill of organizing data and scheduling them in tables or representing them by drawing and examining the results.	10	0	2	0	29	41	
		Exercises that require writing a report on a specific topic and presenting it to the class.	0	0	0	0	0	0	
		Exercises, problems and puzzles that call for the discovery of the solution.	1	0	0	1	0	2	
Horizontal Total			11	0	2	1	29	43	
8	Contemplative	Issues and exercises of the type (What is the relationship ...?, What is different….?).	0	0	0	0	3	3	
		Questions and exercises of the type (give an example of….?)	0	0	0	0	0	0	
		Questions and exercises of the type (draw ....?, Complete the drawing of the figure or the scheme….?)	10	0	8	0	0	18	
		Reflection questions about the submitted material and its possible applications.	0	0	0	0	0	0	4%
		Questions that require submitting a subject seal with short summaries, final notes, and expressions from the student himself.	0	0	0	3	3	6	
		Issues and issues that need the processes of brainstorming and visualization.	2	0	0	3	0	5	
Horizontal Total			12	0	8	6	6	32	
9	Sequential	Presenting the concepts in a sequential step-by-step manner.	7	4	6	2	6	25	
		Questions and exercises that encourage review and investigation of an issue that will be raised later. Linking issues and using previous experiences.	6	3	2	0	0	11	22%
		Exercises and questions that require following a fixed path or steps to a solution.	25	32	43	28	29	157	
Total Horizontal			38	39	51	30	35	193	
10	Holistic	Examples and exercises that show the correlation between the educational material in the mathematical subjects, whether in this course or in the other courses.	8	14	8	1	9	40	
		Mathematical issues that encourage the development of decision-making ability.	0	0	0	0	0	0	5%
		Exercises and questions that require giving a comprehensive idea, point of view, description and general perception.	0	0	0	2	3	5	
Horizontal Total			8	14	8	3	12	45	
Total number of repetitions								886	100 %

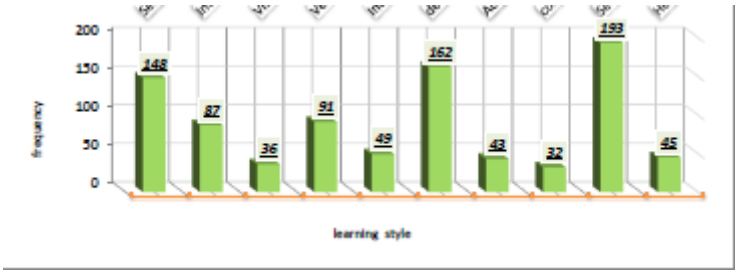


Figure 2:

Chart (3): shows the level of representation of learning styles in the content of the mathematics book for the 4th preparatory class, the literary branch, Repetition is calculated..

3-The answer to the third question, which states : Identifying the distribution of learning methods in the content of the mathematics book for the fourth preparatory class, depending on the branch (scientific - literary). Through testing the validity of the following null hypothesis:

"There are no statistically significant differences between the occurrences of students' learning styles in the content of the mathematics book for the fourth preparatory class, the scientific branch, and the frequencies of student learning styles in the content of the mathematics book for the fourth preparatory class, the literary branch . As a statistical method for inferring the statistical significance of the differences in the frequency of learning styles between the two branches (scientific and literary), the researcher used the chi-square test for independence (Independence test), according to Table (6). Where the results of using (chi square (^{2})), Table (6) shows that the differences are statistically

Table 6: The value of (Ca2) for inference about the statistical significance of the differences between the two branches (scientific and literary) in the frequency of student learning styles.

Branch	Learning methods in the content of mathematics books for the 4th preparatory class.										Horizontal Total	Degree of freedom	Chi Value		Statistical significance level (0.05)
	Sensual	Intuitive	Visual	Verbal	Inductive	Deductive	Active	Contemplative	Sequential	Holistic			Calculated	Schedule	
Scientific	115	157	101	167	66	315	70	67	161	57	1276	9	84.568	16.919	Significance
Literary	148	87	36	91	49	162	43	32	193	45	886				
Vertical Total	263	244	137	258	115	477	113	99	354	102	2162				

significant that the calculated chi-square value and its amount (84.568) is greater than the theoretical (tabular) chi-square value, which is equal to (16.919) at the level of significance (0.05). And the degree of freedom (9), so the statistical decision is to reject the null hypothesis and accept its alternative, which says: There are statistically significant differences between frequencies of student learning styles in the content of the mathematics book for the fourth preparatory class, scientific branch, and between the occurrences of student learning styles in the content of the mathematics book for the 4^{th} preparatory class, the literary branch.

15. Interpretation of Results

The results of the above content analysis process reflect an unbalanced representation of learning styles in the content of mathematics books for the fourth preparatory class (literary science) and that the differences between them are statistically significant as in Table No. (6), as the results showed in Tables (4) and (5) An unbalanced representation of learning styles in the content of the mathematics book for the fourth grade of middle school for the scientific branch, as well as a disparate and unbalanced representation of learning styles in the content of the mathematics book for the fourth grade of middle school for the literary branch and that there is a preference for specific learning styles over other learning methods, as we see that some learning methods have been focused on To a greater degree than other methods and occupied higher rates than other ratios in representation, the content of the mathematics book for the scientific branch, for example, focused on the (verbal) learning style in presenting its mathematical topics, examples, exercises and exercises for verbal learners who prefer to listen to or read information and search for explanations in words. And the learning style (visual) for learners who prefer visual representations of information such as graphs, pictures, diagrams, and the perceptual learning style for learners who prefer sensory, practical and

procedural information, in comparison to other learning styles such as the (contemplative) learning style, the learning style (intuitive) and the (active) learning style, for example, which took a margin. Simple from the content of the book. The same is the case for learning methods in the content of the mathematics book for the fourth grade of middle school of the literary branch, where the focus was on the method of the consecutive learner in presenting mathematical concepts and the deductive learner's style, as it occupied higher percentages than other ratios in representation compared to the active learning style and the contemplative learner style for example, and these results are consistent with Results of a study [8]. The researcher attributes this to:

- The failure to take into account the balance in the representation of learning styles in the content of mathematics books for the fourth grade of middle school may be due to the unintended neglect by the authors and preparers of those curricula of the importance of this balance in the educational learning process, perhaps due to their lack of access to special studies in this area due to its lack of it.

- Perhaps because the authors of the curricula believe that taking into account students' learning styles is a responsibility that the teacher should undertake in the classroom through the methods and strategies of teaching and the various learning activities, which he should choose, plan and prepare for them very carefully. As in our educational system, the educational process is still seen as providing a specific scientific material during a certain period of time during the school day known as the class, and during this session, the teacher is left by virtue of his direct contact with students and as the class leader and mentor, the responsibility of managing that time and exploiting it in presenting The information specified in his method and style, the capabilities and skills he possesses in planning the teaching and preparing all the means and types of activities that are commensurate with all the learning styles preferred by his students and are compatible with their previous scientific capabilities and experiences, level of intelligence and special mental abilities, it is worth mentioning that the teacher must choose methods of learning that suit his students, this is consistent with what was confirmed by the study of [30].

- The presence of some learning methods at low rates compared to other learning methods that appeared is acceptable to some extent from the researcher's point of view, because including them in the content of books in equal proportions may require an increase in the amount of information that should be included in it, especially since we are witnessing a massive explosion of knowledge, as well as taking into account the representation of some of them may require special skills from the teacher and special capabilities and circumstances of the school as well as they may require a longer time to be implemented during the school day as the active learning method.

16. Conclusions

There are some learning methods included in the content of mathematics books for the fourth preparatory class (scientific and literary) and these methods are preferred and favored by some learners when they receive and process information, whereas, some of them tend to focus on facts, data and algorithms, some of them interact more with theories and mathematical models. Some of them prefer visual forms of information such as pictures and diagrams, while others obtain more than verbal forms such as written and spoken explanations. Some prefer to learn actively and interactively, and some succeed more through introspection, working alone, and other methods:

- There is an imbalance in the percentages of representing students' learning styles in the content of mathematics books for 4^{th} preparatory class (scientific and literary) and that some of them were represented in simple proportions and below the required level, compared to the ratios of representing other methods that were focused on.

- There are statistically significant differences between the frequency of students 'learning styles and the percentages of their representation in the content of the mathematics book for 4^{th} preparatory class for the scientific branch and that of the 4^{th} preparatory class students for the literary branch.

17. Recommendation

- The learning style is the way the individual prefers when dealing with it and processing information during the learning process and it explains how learners perceive, their interaction and their responses to the learning environment.

- It is noticed that learning styles represent extreme forms of learning and that most learners may have some characteristics of all methods, and the teacher should pay attention and acknowledge the existence of different methods for learning his students and pay attention to all the methods when planning learning and teaching programs and activities, and he must also help them adopt different learning styles in different situations.

- Curriculum planners must achieve a balance in the level of representation of learning styles in the content of mathematics books and that the focus is not on a specific style and the learning needs of students in each category in the model should be met throughout the curriculum.

- When the balance is not achieved through content, teachers must strive to achieve this balance through the use and adoption of different types of strategies and teaching methods in exchange for trying to teach each student individually according to his preferences, so the goal of teaching in this case must be directed towards helping students grow their skills in every form of their preferred and not preferred form of learning. Here students will learn partly in the way they prefer, which leads to their sense of comfort and desire to learn, and partly in a style that they do not prefer much, and this will push them to practice ways of thinking and methods for solving problems they would not have accepted but they had to use it.

- When the content is unable, in mathematics books in general and mathematics books for 4^{th} preparatory class in particular, to cover all student learning styles or covering them in simple proportions has negative effects on the learner and the educational learning process in general, and this matter is consistent with the educational guidelines for learning and teaching theories and recommendations that focus on the active role of the student and the need to take into account the different methods of learning. As it is not possible to ignore a learning style or focus on it at the expense of other learning methods, because learners learn in different ways, each according to his preferred method.

- It is necessary to inform authors, in the Curricula and Textbooks Directorate, the latest studies and research concerned with analyzing and evaluating textbooks in order to benefit from their results when preparing the content of school textbooks.

18. Suggestions

For completing the present study, the researcher proposes to conduct other similar studies:

- Analyzing and evaluating the content of mathematics books in middle school in the light of learning styles.
- Analyzing and evaluating the content of mathematics books at the elementary level in light of mathematical tendencies and abilities.

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