

COGNITIVE PREFERENCE OF FOURTH- GRADE MIDDLE SCHOOL STUDENTS IN ARABIC GRAMMAR

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Abstract

The current research aims to measure cognitive preference of fourth-grade middle school students in Arabic grammar. To achieve this goal, the researcher chose the descriptive approach. The researcher built a cognitive preference scale tool consisting of (17) paragraphs. For each paragraph (4) patterns chosen by the student in sequence according to his cognitive preference, extracted from the topics of Arabic grammar in the Arabic language book prescribed in the curriculum, part one, amounting to (8) topics, and then the scale was presented to the specialists and experts, in Arabic language curricula and teaching methods, in order to express their observations on it, and all paragraphs of the scale were accepted and some of them were modified, and after the completion of the research tool in its final form, the researcher prepared the cognitive preference scale, and extracted the psychometric characteristics, then applied the cognitive preference scale to a sample of fourth-grade middle school students, and to identify the statistical significance of the differences, the t-test was used and the results showed that the calculated t-values were (60.47), (45.37), (43.64), and (24.59) for the patterns (remembering, principles, critical questioning, application) respectively, and they are greater than the tabular t-value, amounting to (1.96) at a degree of freedom (199) This result indicates that cognitive preference is statistically significant for all patterns, and the remembering pattern took the highest percentage, which is the first place, followed by the principles pattern, then critical questioning, then the application pattern. As for the second goal, it was found that the patterns of critical questioning, application, and principles do not have statistically significant differences, according to the gender variable, and it was found that there are statistically significant differences in the remembering pattern only in favor of females. The researcher attributed this to the fact that females have a greater cognitive preference for the remembering pattern in the desire to excel, succeed, persevere, and endure, and exert more effort. The researcher recommended providing students with cognitive preference patterns that suit their level, as it is necessary to enhance cognitive preference patterns among students through curricula, create an atmosphere for a suitable learning environment full of vitality by identifying cognitive preference patterns, and providing learners with cognitive preference patterns and identifying them to create a student who is aware of and knows what the teacher aims for in his lesson, taking into account individual differences between students in the type of study material, which reveals patterns. Cognitive preference.

Keywords: Cognitive preference - Fourth preparatory - Arabic grammar rules.

Introduction

Research problem

Knowing the patterns of cognitive preference among students and including them in Arabic language curricula is a matter worthy of attention, as the way of dealing with and processing information is an indicator of building cognitive structures within them, and also contributes to interpreting curricula and knowing the relationships between them, and then helps in organizing, interpreting and presenting information to students, and this is an indicative factor in students' achievement. Arabic language curricula face several problems resulting from the presentation of this academic subject, without referring to the students' needs and their attitudes, and their relationship with their thinking and cognitive preferences. The method of presenting the subject is responsible for extinguishing the spark of every cognitive tendency and preference (Al-Jabouri and Alaa, 2015, p. 438). The patterns of cognitive preference allocated to the academic subject are an essential measure for students at all levels; To be more retentive, recallable and transferable, and also to help in curriculum planning, (Al-Ubaidi and Hussein, 2013, p. 13) that the cognitive and technological explosion is expanding in all fields, it has become important to employ and integrate cognitive preference patterns into the elements of the educational system, the most important of which is knowing these cognitive preference patterns, and the basic means of translating these school books, so developing school books is a necessity imposed by the educational reality and its outcomes, and what this requires in terms of modifying and developing the content of school books; In order to keep pace with the tremendous developments, (Badawi, 2019, p. 66) that the problem of the decline in the effect of cognitive preference and its reflection on achievement, and many studies have shown the weakness of students' achievement in Arabic grammar "that students suffer in different educational stages from an apparent weakness in Arabic grammar, and some students have reached the point of hating the grammatical subject as they neglected the rules, relying on the grades of other branches to succeed" (Al-Jubouri, 2015, 337), including this, which was confirmed by the study (Kabbah, 1988), and (Hadi, 2005), and the researcher also found the weakness of students in achievement through his work in the educational field for a period of (20 years), and the scarcity of studies that included measuring cognitive preference patterns in the preparatory stage, as this study lacks the library of Arabic language teaching curricula and teaching methods, and the problem has been identified: 1- What is the availability of cognitive patterns preferred by fourth-year preparatory students in the subject of Arabic grammar? 2- Is there a statistically significant difference in the cognitive preference of fourth-year middle school students according to the gender variable?

The importance of the research

The utility of information for students has great importance in educational and scientific aspects, and can be identified by measuring patterns of cognitive preference, and indicating the teacher's acceptance and orientation towards theoretical aspects or towards practical

aspects, and the modern curriculum emphasizes the utilitarian aspect of information, and from the above it can be said that revealing patterns of preference has a benefit in the utility of information for students (Al-Ubaidi and Hussein, 2013, p. 11) The concept of cognitive preference came as a scientific educational procedure to address the shortcomings in educational systems on the one hand, and to evaluate educational goals on the other hand, to improve and develop academic practices and match the student with the teacher, whether in thinking patterns and teaching methods on the other hand, and cognitive preferences mean the preferred colors of performance for the individual as organizing what he sees and perceives around him, (Shahadah, 1988, p. 11) Determining the cognitive preference and its patterns for the learner is an urgent necessity to choose the best teaching methods and styles that the learner chooses in the teaching process, in a manner that is consistent with And their cognitive perceptions, and their preference for it, and this is what Attwood and Roger's study (1968, Attwoodr), knowledge is a basic source in the era of knowledge explosion, knowledge is no longer fixed but develops with the development of science, which puts education in front of a major challenge, which is to keep pace with scientific progress and face the challenges and problems of the era, and from this emerged the cognitive preference that depends on information and knowledge, and came with good standards of experiences, concepts and innovations that are characteristics of real progress and the main source, (Boran, 2016, p. 6) and the curricula in the era of knowledge and cognitive preference are characterized by the following:

- 1- The curriculum covers all the experiences provided to the student inside and outside the school, with attention to the developmental aspect.
- 2- Taking into account the individual differences between students.
- 3- Building the curriculum in a functional way, taking into account the nature of the preferred knowledge at this stage, and the characteristics and qualities of the student.
- 4- Providing the student with the necessary skills to adapt to the requirements of the era.
- 5- 5- Developing students' skills and attitudes
- 6- Adapting the curriculum to the knowledge and information revolution, 7- Adopting the pivotal approach centered around the student and his tendencies. 8- Diversity in learning and teaching strategies (Al-Hashemi and Faiza, 2007, p. 164)

Cognitive preference is one of the important topics that receives the attention of specialists in the field of cognitive psychology because it reflects individual differences in the process of receiving and communicating information, and cognitive preference patterns represent the preferred methods by individuals in dealing with external information in terms of receiving, processing and organizing it, as they indicate individual differences in the way individuals perceive external situations and events, and the way they think about these situations. (Al-Akkam and Khader, 2017, p. 987)

The increasing interest in cognitive preference patterns has multiple educational advantages that benefit the learner as a result of practicing these patterns, including:

- 1- Helps teachers choose effective teaching strategies.
- 2- It helps curriculum planners to choose effective scientific content.
- 3- It helps teachers to measure the learner's cognitive performance.

4- It provides teachers with information about the extent of curiosity and scientific psychology of learners, which helps to guide learners towards studying a specific scientific subject. .

5- It helps in individual guidance and counseling for learners, as well as in choosing professions; the preference pattern means the way in which the learner tends to prefer and to carry out an organized awareness of the informational aspect contained in the educational situation. (Shabr, 1999, p. 34)

The distinction of the knowledge society with a good level of knowledge is the qualification for leadership, but the amount of knowledge doubles every day, and it is impossible to store all knowledge in his mind, and educators point to the possibility of preferring the study material in accordance with the difficulty of the students, and focusing on the difficulty of learners and their methods of absorbing information, and giving them a cognitive structure that paves the way for them to retrieve their talk to manage, understand and determine their goals, and the way to achieve them to obtain the preferred information that the individual gains, through it cognitive ability and the ability to contemplate with information, (Nasser and Qusay, 2021, p. 187), and cognitive preference is one of the important cognitive topics that receive the attention of specialists in the field of education and psychology, as cognitive preference represents the preferred patterns by the student in the process of consuming information, in terms of receiving, processing and organizing it, as it indicates individual differences in the way the student perceives situations, and thus cognitive preference focuses on how to acquire knowledge, evaluate it, and retrieve it from learners, and then modify and interpret it through strategies and methods Certain, dealing with the learner's mental abilities. (Al-Basri, 2007, p. 88)

The impact of cognitive preference is evident in the evaluation of curricula. It is necessary to present a new model that achieves the main goals of learning. Paying attention to cognitive preference helps in the student's preference in interacting with information. Then, it becomes possible to reveal the cognitive patterns of students, as knowing the preference helps in measuring the student's ability to some facts, give definitions and understand concepts, and apply what they have studied and learned, while solving the problem that they face in new situations. Curricula that take into account cognitive preference patterns help reveal how learners deal with the information presented to them, as well as using skills and higher mental levels that are compatible with nature and continuous modernity, by using high-ability skills. (Muhammad, Wathiq, 2023, p. 354) The cognitive preference pattern of the learner has an important impact on the study of different subjects, as it works to develop the cognitive environment of the learner (Majid, 2001, p. 13). Cognitive preference is a key and indicator of the teaching method and the educational atmosphere that the teacher will prepare in the classroom, and helps in organizing appropriate situations. Accordingly, studying cognitive preference and determining its pattern and the degree of its prevalence among students becomes an urgent necessity in order to help them choose successful study methods in the teaching process and determine the methods and assessment methods that suit the cognitive preference pattern of their students. Also, revealing preference patterns helps in the process of students evaluating themselves according to their preferences and the possibility of

changing them for the better. (Qatami, 2005, p. 217) The researcher believes that there is a special interest in the topic of cognitive preference in recent years, especially after the progress shown by cognitive psychology in the field of information processing, as it is not important for the learner to determine the correctness of his information or its error, but it is better to determine the way he prefers to deal with this information, which is provided by measuring cognitive preference, with four patterns that have been identified (retrieval pattern, critical questioning pattern, principles pattern, and application pattern). This interest is evident from the path of many studies that have addressed cognitive preference, as determining cognitive preference for the learner requires choosing the appropriate methods for their cognitive perception and it is integrated into the curricula, and curriculum developers must organize and interpret the information through cognitive processing, benefiting from the analysis that enables him to produce and know cognitive representations that determine cognitive patterns regarding all educational situations he faces. (Al-Zaghloul, Al-Zaghloul 2009, p. 8)

The use of a cognitive preference scale is one of the evaluation tools that reflects how the learner deals with information, which is followed by the development of what is known as cognitive preference and its patterns, based on the principle of what the learner prefers and what experience he has about the subject of learning. The use of cognitive preference patterns and their inclusion in tests is an affirmation of the cognitive orientation, which is related to how information is processed, stored, acquired and processed, as it is not better for the learner to determine correct and incorrect information, but it is better to determine how he prefers to deal with that information mentally (Zaytoun, 1989, p. 136). Attitudes towards the subject indicate tendencies that qualify the individual to respond to specific preference patterns. Therefore, the importance of learning comes from the fact that it contributes effectively to creating, acquiring and directing trends in the right direction. The educational content that leads to the formation of desirable trends in the student is more useful than education that emphasizes cognitive gain. Since the influence of trends continues and information is not subject to the factor of forgetting (Barakat, 1997, 176), the importance of the research comes from the following:

- 1- Determining the cognitive preference and its patterns for the learner is an urgent necessity in choosing the best teaching methods and styles that the learner chooses in the teaching process, in line with their cognitive perceptions and preferences.
- 2- Measuring cognitive preference with four patterns, which were identified as (retrieval pattern, information completion pattern, principles pattern, and application pattern) is the best in determining how to deal with this information, which is provided by this scale.
- 3- Attitudes towards the material indicate tendencies that qualify the individual to respond to specific preference patterns.

Research Objectives

The research aims to identify:

- 1- Measuring cognitive preference patterns among fourth-grade middle school students?

2- Is there a statistically significant difference in cognitive preference among fourth-grade middle school students according to the gender variable?

Research limits

1. The research sample consists of fourth-grade middle school students in Diwaniyah Governorate.
2. Arabic grammar rules for fourth-grade middle school, part one.
3. Research tool measuring cognitive preference.
4. First semester (2024/2025)

Definition of terms

First: Cognitive preference was defined by:

- Mcnaught (1982) as "cognitive patterns that focus on how individuals acquire knowledge and then evaluate, retrieve, modify and change it through curricula and teaching methods(Mcnaught, 1982, 177)

- Ibrahim (2004) "It is the style that an individual prefers when perceiving or organizing the components of the educational situation, and we can distinguish between the following cognitive preference patterns (retrieval pattern, critical questioning pattern, principles, and practical applications" (Ibrahim, 2004, p. 1641)

Procedural definition of cognitive preference

Measuring cognitive preference patterns and their availability among fourth-grade preparatory students through a scale prepared by the researcher in the form of test paragraphs, numbering (16) paragraphs that include four alternatives representing cognitive preference patterns (retrieval pattern, which is accepting information as it is without modification, The critical questioning pattern is the criticism of information in terms of its completeness, perfection, truthfulness and generalizability. The principles pattern is the acceptance of information because it clarifies or sheds light on a basic principle or relationship. The application pattern is the acceptance of information because it has value and use in a specific social or scientific context) in the Arabic grammar material designated for fourth-year middle school students, part one.

Second: Arabic grammar

A- Linguistically: In (Lisan Al-Arab), the rule is stated: The origin of the foundation, and the rules, the basis, and the rules of the house, its foundation. In the revelation, And when Abraham raises the foundations of the house and Ishmael, Al-Zajjaj said: The foundations are the pillars of the building that support it, the material (sat) (IbnManzur, 2008, p. 360)

B- Technically: It was defined by:

- (Ismail and Salwa): "The basic means by which linguistic knowledge and concepts are presented, and that it is the basic framework that determines the abilities and skills acquired by students".(Ismail and Salwa, 1967, p. 14)

•(Al-Dulaimi and Kamil): "A general phrase that includes the rules of grammar, morphology, rhetoric, phonetics, and writing, but the rules of the Arabic language as they are usually addressed in school books include the rules of grammar and morphology" (Al-Dulaimi and Kamil, 2004, p. 52)

•(Al-Tamimi): "A group of grammatical rules and laws that regulate the structure of the sentence and the interconnected and connected relationships between its words, and a group of morphological rules that examine the changes that occur to the word in its structure"(Al-Tamimi, 2015, p. 26)

Procedural definition of Arabic grammar books:

Topics prescribed for fourth-year middle school students in the Arabic language book, part one, amounting to (8) topics for the academic year 2024-2025, and include grammatical topics related to the rules and methods of the Arabic language, through which the researcher built the cognitive preference scale with its four patterns.

Third: The fourth grade of middle school (defined by the Ministry of Education) is the first academic grade of the middle school stage and occupies students aged 16-17 years. (Republic of Iraq, Ministry of Education, 2012, p. 11)

Chapter Two Theoretical Aspect and Previous Studies

Cognitive preference is one of the modern concepts that appeared on the educational scene. Cognitive preference is one of the types of cognitive methods that received great attention from those working in the field of education, because it is an important dimension in the process of interpreting many phenomena and teaching procedures and developing them. Receiving information is compatible with the processing processes of perception, memory and thinking. The preference process comes with multiple aspects that depend on perception and abilities that direct to choosing the appropriate pattern. Revealing the cognitive pattern helps in adapting to the school book and using teaching methods, and may require increasing the cognitive ability to be consistent with his abilities. Therefore, it gives a set of mental and cognitive features that work as indicators that help the learner in receiving information, dealing with it, and responding to it. We will address several axes: First - Characteristics of cognitive preference Second - Cognitive preference and the educational process. Third - Patterns of cognitive preference. Fourth: Educational advantages of cognitive preference.

First: Characteristics of cognitive preference: Cognitive patterns are characterized by a number of characteristics, which are as follows:

A- Cognitive preference is linked to cognitive activity, not to cognitive content itself, as it reflects individual differences between individuals in the method of choosing and implementing cognitive processes such as perception, attention, thinking, and problem solving.

B- Cognitive preference is linked to the cognitive aspect and reflects several dimensions of personality, as it extends to include other aspects such as emotional and social.

C- Cognitive preference can be measured by non-verbal means such as images, shapes, and motor actions, and this would remove many of the difficulties that stand in the way of using verbal measures, such as the difference in the scientific and cultural level of individuals. (Al-Sharqawi, 1992, p. 120)

D- Cognitive preference is characterized by a kind of stability and relative constancy over time, which helps predict the behavior of the individual towards cognitive and social situations. (Atia, 2008, p. 26)

Second: Cognitive preference and the educational process

Education is one of the pillars on which society depends and maintains its entity, and on which society's progress and development are based, and the curriculum with all its elements and components of a prescribed book, teacher, goals and learner, on which the success or failure of education depends. In the following, we will address the relationship of cognitive preference to the educational process through its elements:

1- **The study material:** The study material has its own importance, as it represents the experiences, activities and events included in the educational curricula, in the different stages of education. Some of them may include a focus on memorization and recall, and others stimulate thinking, curiosity and exploration. The study material is no less important than the role of other elements of the curriculum, as the study material has a great impact on developing students' preferences and abilities. Cognitive preference appears clearly when the learner faces an educational situation. In this case or situation, it will depend greatly on the nature of the study material he is studying. Hence, the need to pay attention to building curricula that care and focus on cognitive preference patterns, so that they help develop cognitive preference, which is an aid in solving learning problems, whether inside or outside the classroom. Studies have confirmed that different curricula undoubtedly generate different cognitive preferences among students. (Shahadah, 1988, p. 11)

2- **The teacher:** The role of the teacher in the educational process is great and very important, and has the greatest impact in directing the behavior and thoughts of students, as students acquire the inclination and cognitive preference, as the personal qualities that the teacher possesses appear on his students, as he is able to provide an exciting environment for teaching his students, consistent and compatible with their different cognitive preferences, and the results of educational studies and research have shown that students who studied at the hands of teachers who have a tendency towards the exploratory method in teaching showed a cognitive preference for critical questioning and application, and so on for the rest of the cognitive patterns (P235-264), TamirK, 1975(,

3- **The learner:** Measuring the cognitive preference of the learner provides information on the way in which the learner deals with a part of the information, and specifically it refers to the four methods, retrieval, principles, critical questioning, and application, that the learner needs to link a part of the information to a previous part, that interest did not It is directed to the student knowing the correct or incorrect information only, but it has developed to include how he deals with the information mentally. (Zaytoun, 1989, 136)

4- **Teaching method:** When the method is concerned with the meaning in the subject of learning by helping the student to realize the relationship in the aspects of the learned material, the student strives to reach the meaning through basic ideas and principles, and forming links with previous experiences, and then the student may tend towards the principles pattern, which is in which certain information is accepted in which relationships appear between facts and concepts within a certain principle, and when the method is based on memorization, the student produces the educational material itself, and this is what is known as the retrieval and recollection pattern, where the student tends to remember certain information automatically without examining it. (Ahmed 2008, p. 42) The researcher believes that the teaching method may suit some students, raising their academic level, and that knowing the patterns of cognitive preference, and diagnosing them by the teacher, helps in choosing the teaching method that suits each pattern of cognitive preference.

Third: Cognitive preference patterns

Uncovering cognitive preference patterns constitutes a middle ground between cognitive (mental) educational goals and affective (emotional) goals. This is because it is related to the learner's readiness and tendencies, and is determined by four cognitive patterns:

1- The retrieval pattern: This means that the individual accepts information as it is, without focusing on its scientific applications. Therefore, it is a preference to remember specific facts or terms, and includes accepting information without taking into account the contents, applications, or determinants. In this field, cognitive preference is viewed as tendencies and interests, revealing the tendency to learn names and numbers, and learn facts. It is said that there are two ways of remembering: retrieval and recognition. As for retrieval, it is recalling the past in the form of words, meanings, movements, or mental images. We retrieve a verse from a poem or an idea from ideas. As for recognition, it is a feeling that what we are now aware of is part of our previous experiences or is known and familiar to us. Retrieval in cognitive preference is accepting information as it is. It is not just a process of remembering. The words expressing that experience may not be the same words when retrieving it, but they are an expression of the same meaning. Thus, retrieval in the concept of cognitive preference means Accepting information without criticism and guidance. What distinguishes the retrieval pattern is that the method that leads to memorization and indoctrination in education, in our schools, has led to the graduation of receptive minds that are easy to program, in addition to their inability to accept other opinions, and the ability to think freely and creatively, which is based on active positive education in which the learner has capabilities and energies (Al-Zayat, 2009, p. 221).

2- Application pattern: It means emphasizing the use of information and applying it to serve society in general in various fields. The individual who prefers this pattern is interested in applying information to solve problems in real-life situations in daily life in trade, industry, agriculture, etc., and represents accepting information in light of its benefit and applicability. In this field, cognitive preference reveals that the student who acquires new information without conscious, conscious application produces ineffective learning or incomplete memorization of information in the long term. (Al-Abdan, 1993, p. 297) Students envision

learning in two different ways: the first represents the category of quantitative perceptions of education, and the other represents the category of qualitative perceptions of learning, with several levels within each category. (Al-Qannas, 2005, 148)

3-Critical questioning style: It means that the individual questions critically about the completeness of information, its generalizability, or its limited specificity, and doubts its veracity. The individual who prefers this style is interested in critical analysis and suggestions. Critical thinking is a style of thinking that evaluates and observes facts, phenomena, and events related to a problem according to specific conditions to reach a judgment and results in a logical manner, using skills and behaviors from evaluating arguments, and evaluation in light of the criterion of logical necessity, or evaluation based on experience, inference, and deduction. Helping the learner on how to learn is a basic goal of learning. The student gains cognitive strength and the ability to process information through it. This style requires moving from an education based on a culture of memory to an education of information based on a culture of creativity; Therefore, it requires a method that is centered around information only, but rather works to operate information and transform it into knowledge, based on the logical operation of mental processes (Al-Khazraji, 2011, p. 3). It can be said that the lack of information that prompts the individual to critically question paralyzes the launch, creativity, and openness of thought, and openness is the renewal of thought and the expansion of its scope. The learner who has a critical questioning pattern evaluates the scientific information given to him, and determines its completeness, accuracy, and place of generalization. The learner who prefers this pattern is characterized by his skepticism about information in terms of its completion, completion, and classification, and that he shows interest in critical analysis and commenting on the veracity of this information.

4- Principles pattern: It means accepting information that explains and clarifies basic concepts and clarifies the relationship between things. Realizing the relationships between concepts is one of the most prominent educational applications in meaningful cognitive learning, which occurs when the learner realizes a new relationship between a group of concepts. (Ahmed, 2008, p. 47)

The researcher believes that information according to this pattern is a reason for remembering, as the learner remembers information through the process of assembling its parts and filling the gaps between them. The learner who does not prefer this pattern will have information that is a reason for forgetting because he does not know the connections between that information. The relationship between the four patterns (retrieval, applications, self-questioning, principles)

These four patterns constitute the cognitive preference, as each element provides specific information or data, as each pattern of cognitive preference is linked to a meaning for education. The principles pattern is an active processing of information, determines the relationship between concepts and organizes knowledge in a cognitive structure, and the applications pattern is able to recall the tasks of the principles pattern or the critical questioning pattern, and its success in these tasks should not depend on chance, if these tasks are applications related to its preference. The role of the remembering pattern comes from

knowing the facts and emphasizing solving problems, which leads to an increase in achievement that is linked to effective education (Al-Ubaidi and Hussein, 2013, p. 95)

Fourth: Educational advantages of cognitive preference patterns

The increasing interest in cognitive preference patterns is due to the many educational advantages, including:

1- It helps curriculum planners test effective content. 2- It provides teachers with measuring the learner's cognitive performance. 3- Help teachers choose appropriate and effective teaching strategies. 4- It provides teachers with information about the extent of learners' curiosity and scientific utility, which helps guide students towards a specific scientific subject. 5- It helps in individual guidance and counseling for learners as well as choosing scientific careers. (Awad, 2016, p. 65)

Previous Studies

1- Al-Qaisi's study 2008

This study was conducted in Iraq, and aimed to identify the cognitive preference patterns of students in distinguished schools, and the differences between these patterns according to gender and their relationship to the scientific trends of students, with a focus on the most common cognitive preference patterns such as retrieval, completion, principles, or application. Four schools for distinguished students were selected, two schools in the General Directorate of Education in Baghdad, Al-Rusafa, so that the sample of students was 120 male and female students distributed over four sections. The cognitive preference test was first applied to all members of the sample, and then the attitude scale was applied. The results showed that the cognitive preference patterns are four patterns: retrieval, completion of information, application, and the principles pattern. It also became clear that there is no relationship between the retrieval pattern and their direction, and there is also an inverse relationship between the principles pattern and the direction, and a very weak relationship between the application pattern and their direction. To know the extent of the difference in the sample's performance on each of these patterns according to the gender variable, It turned out that there were no statistically significant differences. (Al-Qaisi, 2008)

2- Issa's study 2013

This study was conducted in Iraq at the University of Babylon, College of Education for Human Sciences, and aimed to identify the patterns of cognitive preference, the level of curiosity, and the level of shyness, among fifth-grade middle school students. To achieve these goals, a scale of cognitive preference patterns, a scale of curiosity motivation, and a scale of shyness were built, and they were applied to a sample of 516 middle school students in the center of Babylon Governorate for the academic year (2011-2012). They were selected using a random stratified method with a proportional distribution with fifth-grade middle school students, scientific and literary specialization for both sexes (males - females). The following results were reached:

- 1- There is a high cognitive preference for all patterns, as the retrieval pattern is more prevalent and takes first place, followed by the principles pattern, the critic pattern, and then the application pattern in fourth place.
- 2- Fifth-grade middle school students They have a motive of curiosity.
- 3- Students have a sense of shyness. In light of these results, a number of conclusions were made and a number of recommendations and proposals were formulated. (Essa, 2013)

Chapter Three // Research Methodology and Procedures

In this chapter, the researcher presents the procedures he conducted to determine the community, choose a representative sample and the research tool, and verify the stability and validity of using appropriate statistical methods to analyze and process the data statistically; in order to achieve the goals of the current research, and since the main goal of the research was: (Measuring the cognitive preference of fourth-year preparatory students in the subject of Arabic grammar), the researcher chose the descriptive survey method for this, as it suits the research.

First: Research Community

The research community consists of fourth-year students in the scientific and literary branches in the preparatory stage, males and females, in the Diwaniyah Education Directorate / Morning Study Center, in order to know the total number of preparatory and secondary schools and their geographical location, and the number of students studying the Arabic language subject, for the fourth preparatory grade for the academic year (2024/2025) Since the sample was very large, the researcher visited the statistics of the Diwaniyah Education Directorate and the secondary schools affiliated with the center according to the research sample, as their number reached (4395) and Table (1) clarifies that.

Table (1) Number of individuals in the research community distributed according to the center's schools

step	Settings of the Directorate of Education of Diwaniyah for Girls / Center	Fourth preparatory	step	Settings of the Directorate of Education of Diwaniyah Males / Center	Fourth preparatory
1	Sana'a	189	1	Central Preparatory School for Boys	321
2	Arabism	220	2	Qutaiba First and Second Secondary School	400
3	Damascus first	116	3	Ibn Al-Nafis Secondary School for Boys	125
4	Vanguard	141	4	Republic Preparatory School	108
5	Maysaloun	280	5	Al-Sadrain Preparatory School	400

6	The virtuous	155	6	Olive Preparatory School	93
7	The lute	200	7	Diwaniyah Intermediate School	52
8	paradise	290	8	Al-Ghadeer Preparatory School	164
9	Diwaniya for girls	128	9	Abi Al Turab Advanced Secondary School	92
10	Al Kawthar	179	10	The two heavy things	85
11	Pleasure	160	11	jeweler	205
12	The second Damascus	126	12	dignity	81
	the total	2184			2211

Second: Research sample

The researcher chose his research sample using the regular cluster random method, as the number of sample members reached (200) male students and (200) female students from the total sample of fourth-grade middle school students in the Diwaniyah Center/Diwaniyah Education Directorate, as shown in Table (2).

Table (2) shows a sample of the research community distributed according to their numbers and gender.

Total Sample	Number of students in the fourth grade of middle school males and females	
Republic High School for Boys		100
Zeitoun Preparatory School for Boys		100
Maysaloon Preparatory School for Girls	100	
Al-Tali'a Preparatory School for Girls	100	

Third: Research tool:

To achieve the research objectives, the researcher prepared a tool to measure cognitive preference patterns. Given the lack of a cognitive preference scale in the Arabic grammar subject, to the best of the researcher's knowledge, the researcher built this scale, following the following steps:

1-Determining the theoretical foundations and basic considerations for building the scale, as Cronbach emphasizes the necessity of starting by defining the structural concepts from which the scale preparation procedures are based (Gronbach, 1970, 469). The researcher relied on the four patterns identified by (Heath), since this research aims to build a cognitive preference scale with its four patterns, so it requires that the general scale include four sub-scales, each of which measures one of the four patterns. Since the aim of the research is to know the prevalence of these patterns in order among students, the researcher decided to collect these

four scales in one scale, so that each paragraph includes these four patterns represented by the alternatives of its paragraphs, so that a classification scale can be launched from it.

2- Preparing the scale paragraphs in its initial form: The researcher relied in preparing the scale paragraphs on the topics prescribed in the Arabic grammar subject in the Arabic language book, part one, for the fourth grade of middle school, part one, which amounted to (8) topics, each topic was taken according to its percentage in the book, and the scale paragraphs were formulated in light of those rules, and the scale paragraphs in its initial form amounted to (17) paragraphs formulated in the form of verbal situations, each of which represents a situation that the student went through, followed by four alternatives for the answer, the first alternative represents the retrieval pattern, the second represents the critical questioning pattern, the third represents the principles pattern, and the fourth represents the application pattern, i.e. in the form (A, B, C, D), and thus each paragraph contains four patterns and is graded according to your degree of preference, so that the most preferred alternative is given number (1), while the least preferred is given number (2), and the least preferred is given the third preference number (3), and the least preferred is given the fourth preference number (4), so that the student chooses (4) preferences for each paragraph he chooses on a paper prepared for this purpose As shown in Table No. (3)

Table No. (3) Distribution of scale paragraphs on Arabic grammar topics for the fourth year of middle school

Application pattern alternatives	Alternatives to the critical inquiry pattern	Alternatives to the principle pattern	Retrieval pattern alternatives	Scale paragraphs	Ratio	Number of pages	Topics	
2	2	2	2	2	10%	6	Past tense	1
3	3	3	3	3	18%	11	Present tense verb	2
2	2	2	2	2	13%	7	Present tense verb construction	3
2	2	2	2	2	10%	6	Imperative verb	4
2	2	2	2	2	15%	9	Infringement and necessity	5
2	2	2	2	2	10%	6	Subject	6
2	2	2	2	2	10%	6	Attribution of the imperfect verb to pronouns	7
2	2	2	2	2	14%	8	Object	8
17	17	17	17	17	100%	59	Total	

3-Description of the scale correction: The scale consists of (17) paragraphs, and each paragraph contains (4) alternatives, representing the four patterns (remembering, critical questioning, principles, application), distributed according to the student's choice of patterns. After formulating the scale instructions and distributing the score after verifying the validity and reliability of the scale paragraphs, to be presented to the exploratory sample, the scale instructions included general information, its purpose, and the number of its paragraphs. A score of (one) was allocated to the paragraph that indicates the choice, and each score was calculated for each pattern according to its choice.

4- Validity of the cognitive preference scale: It indicates that the sample of paragraphs is representative and appropriate for the scope of the behavior to be measured, so this type of personality measurement is called objective validity (Andorson, 1981, 136). The researcher verified the content validity of the cognitive preference scale by defining each pattern and preparing the paragraphs according to the topics to be taught in the Arabic grammar course. Apparent validity is shared with content validity because it is based on logical analysis in verifying the scale's ability to measure what it was designed for. The researcher verified apparent validity by presenting the scale to a group of experts and specialists in educational and psychological sciences, so they confirmed the validity of its paragraphs to measure what it was designed to measure.

5-Paragraph formulation:

After the researcher presented the scale instructions and paragraphs to some specialists in measurement, evaluation, teaching methods, and in various fields of psychology, he asked them to express their opinions and observations regarding the appropriateness of the instructions, the extent to which the scale is suitable for achieving the research objectives, and the validity of the scale (scale validity) and its paragraphs to measure what it was designed for. In light of the arbitrators' opinions, all (17) paragraphs were kept.

6-Logical analysis of paragraphs:

Logical analysis is necessary at the beginning of preparing paragraphs; Because it indicates the extent to which the paragraph apparently represents the trait that it was prepared to measure, however, the paragraph that is formulated in a way that is related to the trait contributes to raising its discriminating power and its validity coefficient (Al-Kubaisi, 2001, p. 171). Therefore, the researcher presented the scale to (15) experts specialized in educational and psychological sciences, and asked them to express their opinion on the validity of the scale paragraphs in terms of their suitability for the level of middle school students, and their approval of the alternatives adopted for each paragraph and the extent of their suitability, and whether the number of paragraphs is appropriate, and whether its formulation is good, or needs modification. For the purpose of analyzing the experts' opinions on the scale paragraphs, the chi-square was used for a single sample, and each paragraph was considered valid when the calculated chi-square value was significant at the level of (0.05), which is equivalent to a percentage of (80%) of the number of experts, and Table (4) shows this:

Table (4) shows the opinions of experts on the paragraphs of the cognitive preference

Statistical significance	Tabular value of Ka2	Ka2 value of favoritism	Ratio	Approvers	Paragraphs	Number of paragraphs
function	10.83	15	100%	15	1,2,3,4,5	5
function	10.83	11.53	87%	13	6,7,8,9,10	5
function	10.83	13.13	93%	14	11,12,13,14,15,16	6

7-Scale instructions and exploratory application: To clarify the scale paragraphs, a set of instructions for the scale were developed.

The researcher applied the scale to a sample of (50) students, who were tested randomly, in order to identify the clarity and instructions of the scale and its paragraphs, as well as to reveal the unclear or ambiguous paragraphs for the individuals in the scale sample. After this application, it became clear that the scale instructions and paragraphs were clear to the examinee, and the time taken for them to respond to the scale ranged between (25-40) minutes. 8-Stability of the cognitive preference scale Stability refers to the degree of stability of the scale and consistency between its parts, and since stability is the consistency in the set of degrees of the scale paragraphs, which are supposed to measure what should be measured. (Marshall, 1972, 104)

For the purpose of calculating reliability, the Kuder-Richardson method was adopted. This method is one of the methods used in calculating reliability, as it is done by applying the test once using this equation, which is based on consistency in the individual's performance from one paragraph to another. It does not require dividing the test into two equal halves (Michael, 1997, p. 212).

Table No. (5) between the values of the stability of Curdier-Richardson (5)

Cognitive preference	Coefficient of stability	step
Recall pattern	0.77	1
Critical Questioning Pattern	0.74	2
Pattern Principles	0.76	3
App style	0.78	4

9-Applying the scale in its final form: Once the tool was ready for application with (17) paragraphs, the researcher began applying the scale on a sample consisting of (200) males from Al-Jumhuriyah Preparatory School for Boys, and (200) females from Maysaloun Preparatory School for Girls from (12/1/2024 until 12/12/2024

Fourth: Statistical methods:

The researcher used statistical methods using the statistical program ((Spss.

-Chi-square.

-T-test for one sample.

-Kuder Richardson equation (20) to extract the stability coefficient of the scale

Chapter Four // Research results and their interpretation, conclusions, and recommendations

1. What is the percentage of cognitive preference patterns among fourth-grade preparatory students? After collecting the data resulting from the application of the cognitive preference scale, on the basic sample of (200) male and female students, the students' answers to the preference scale were analyzed Cognitive, for the four patterns (memory pattern, principles pattern, critical questioning pattern, application pattern) as in the following table:

Table (6) The arithmetic mean, the hypothetical mean, the standard deviation, the calculated and tabulated t-value, for the students' choices in the cognitive preference patterns scale.

Significance	Degree of freedom	T-value Calculated Tabular		Standard Drift	Hypothe tical mean	Arithmetic mean	Sample size	Style
Function	199	1,96	60,47	3,471	27	37,52	200	Retrieval pattern
Function	199		45,37	5,175	24	35,57	200	Pattern Principles
Function	199		43,64	3,449	24	31,55	200	Critical Questioning Pattern
Function	199		24,59	4,438	24	29,46	200	Application pattern

Table (6) Arithmetic mean, hypothetical mean, standard deviation, calculated and tabular T-value, for students' choices in the cognitive preference patterns scale

From the table above, the arithmetic means of these patterns reached (37.52), (35.75), (31.55), and (29.46) with a standard deviation of (3.471), (5.175), (3.449), and (4.438) for the patterns (retrieval pattern, principles pattern, critical questioning pattern, application pattern) respectively. By comparing the achieved means with the hypothetical mean for each pattern, we find that all the arithmetic means are higher than the hypothetical mean. To identify the statistical significance of the differences, the t-test was used and the results showed that the calculated t-values reached (60.47), (45.37), (43.64), and (24.59) for the patterns (recollection, principles, critical questioning, application) respectively, which is greater than the tabular t-value, which is (1.96) at a degree of freedom (199) This result indicates that cognitive preference is statistically significant for all patterns, and the remembering pattern took the

highest percentage, which is the first rank, followed by the principles pattern, then self-questioning, then the application pattern.

2- Is there a statistically significant difference in cognitive preference among fourth-year science preparatory students according to the gender variable?

Table (7) The arithmetic mean, the hypothetical mean, the standard deviation, the calculated and tabulated t-value, for the students' choices in the cognitive preference patterns scale according to the gender variable.

Significance	Degree of freedom	T-value		Standard Drift	Arithmetic mean	Sex	Sample size	Style
		Tabular	Calculated					
Function	199	1,96	4,679	1.751	3,854	Male	100	Retrieval pattern
				2.067	4.781	Female	100	
Non-function	199	1,96	1,811	1.751	3.215	Male	100	Pattern Principles
				1.779	3.55	Female	100	
Non-function	199	1,96	1,816	1.766	3.365	Male	100	Critical Questioning Pattern
				1.783	5.523	Female	100	
Non-function	199	1,96	1.721	1.755	3.211	Male	100	Application pattern
				1.782	3.493	Female	100	

Arithmetic mean, hypothetical mean, standard deviation, calculated and tabular T-value, for students' choices in the scale of cognitive preference patterns according to the gender variable To answer this question after sorting the male and female questionnaires, the researcher extracted the arithmetic means, standard deviation, and calculated t-value for two samples, and the tabular value for each pattern of cognitive preference according to the gender variable (male, female) as in the table above.

From the table above, it was found that there were no statistically significant differences in the patterns of critical questioning, application, and principles, and it was found that there were statistically significant differences in the pattern of recollection only in favor of females. The researcher attributed this to the fact that females have a greater cognitive preference for the retrieval pattern; This is due to the desire to excel, succeed, persevere, endure, and exert more effort and have time, unlike males.

Recommendations:

- 1- Provide students with patterns of cognitive preference that suit their level, as it is necessary to enhance patterns of cognitive preference among students through curricula.
- 2- Create an atmosphere for a suitable learning environment full of vitality by identifying patterns of cognitive preference.
- 3- Providing learners with cognitive preference patterns and identifying them; to create a student who is aware of and knows what the teacher aims for in his lesson.

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- 4- Taking into account individual differences between students in the type of study material, which reveals cognitive preference patterns.

Suggestions:

- 1- Conduct similar research for other educational stages (intermediate, primary, university)
- 2- Conduct research on cognitive preference and its relationship to achievement and creative abilities.

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