

**VISUAL PERCEPTION IN MIDDLE SCHOOL STUDENTS**

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Abstract

The current study focuses on understanding how middle school students perceive visual information and explores whether there are any differences in this perception based on gender and academic specialization, such as scientific versus literary studies. To accomplish this, the researcher adopted a descriptive approach and utilized the Andre Ray Visual Perception Test. This test was given to a group of 300 randomly selected male and female middle school students. After collecting the data, the researcher analyzed it using appropriate statistical methods to draw meaningful conclusions.

The findings reveal that middle school students do indeed have the ability to perceive visual information, as shown by their test responses. Interestingly, the study found no significant differences in visual perception between male and female students, indicating that both genders are equally motivated and knowledgeable as they advance to the preparatory stage. However, differences in visual perception were noted among students based on their academic focus—scientific or literary. These differences are likely due to the distinct teaching and training methods used in each specialization, which significantly influence the students' experiences. Specifically, students in the scientific branch seem to better utilize visual perception to generate and practically apply ideas. The research concludes with several recommendations and suggests potential topics for future studies in this field.

Keywords: Visual Perception, Middle School Students, Gender Differences, Academic Specialization, Teaching Methods.

Introduction**Research Problem**

Perception is the second cognitive mental process through which an individual interacts with environmental stimuli to form a conceptual framework that conveys meaningful understanding. It is also a multifaceted cognitive ability influenced by various factors such as prior experiences, emotional state, and sensory integrity. Sensory functions, particularly vision, play a fundamental role in acquiring and processing information, thereby fostering the cognitive development of learners. Learning difficulties can impact a learner's cognitive achievement. Some studies suggest that children with learning difficulties often suffer from a functional neurological deficit that interferes with cognitive and academic processes (1).

Neurological impairments can affect an individual's ability to achieve academic success. In this context, many researchers believe that learning difficulties are the result of developmental deficiencies in visual perception processes (2). Visual perception plays a role in interpreting visual



stimuli entering the brain through the sense of sight. One of the areas of concern in learning difficulties is the comprehension of mathematics.

Scientists have attributed several characteristics to mathematics. Osama Mohammed Al-Batania considers mathematics a mental science that relies on abstract concepts and processes of thinking, reasoning, and proof. By nature, it is a cumulative and interconnected science (3).

Difficulties in learning mathematics are widespread. Statistics indicate that approximately 10.8% of children from the fourth to the sixth grade suffer from mathematical learning disabilities. Results from the Cognitive Neuroimaging Laboratory in Orsay (Paris) show that developmental difficulties in learning mathematics among children of normal intelligence living in stable social environments are due to a disorder in number perception. In the hospital service laboratory, results showed that many children have learning difficulties related to a primary disorder in number perception, associated with the disorganization of neurons in the internal frontal cortex of the brain (4).

Studies by Hirsdrunner, Frederix, and Deloche (1991) support this direction, suggesting that brain injuries in the right hemisphere can lead to difficulties in counting objects placed on a table, i.e., difficulty in sequential counting according to the spatial arrangement of objects. In contrast, injuries in the left hemisphere can lead to difficulties in extracting numbers (5).

Right-handed individuals are more comfortable with thinking and visualizing from left to right, with a preferred rotational direction being clockwise, whereas left-handed individuals are more comfortable thinking from right to left, with a preferred rotational direction being counterclockwise. The roles of the two brain hemispheres in mathematical operations differ, with the left hemisphere believed to be responsible for processing numerical symbols and retrieving numerical facts from semantic memory. The right hemisphere plays an important role in performing mathematics that require qualitative inference or spatial-visual organization (6).

From the aforementioned studies and research, it can be observed that learning difficulties, particularly in mathematics with its dimensions (numbers and shapes), may be related to the imbalance in the functional neural distribution of the brain and cerebral dominance. Left-handed individuals may experience different mathematical learning difficulties compared to right-handed individuals due to differences in their thinking and visualization pathways. On the other hand, visual perception disorders, as a cognitive ability, may be related to problems in brain structures and functional brain disorders (7). We can pose the following question: Is there visual perception among preparatory stage students? Are there differences in visual perception according to gender and specialization variables?

Importance of the Research:

Students in their various developmental stages are an important part of society and have all psychological, educational, and social rights. This is to achieve the highest possible degree of growth and the highest levels of cognitive perceptual development and psychological adaptation. The preparatory stage is one of the most influential stages in shaping and forming their personalities, as it is an important educational stage in which learning occurs automatically and paves the way for the future educational process. Therefore, it is a crucial stage in shaping personality and the path of physical, motor, sensory, cognitive, linguistic, social, moral, and



emotional growth. Thus, the current research has both applied and theoretical importance, including:

1. The possibility of developing a preventive program (using study results) for visual perception disorders in preschool age and kindergarten.
2. The possibility of predicting visual perception disorders.
3. Contributing to the development of a therapeutic program to treat learning difficulties for school students suffering from visual perception difficulties.
4. Contributing to modern research, especially in the field of neuroscience.
5. The possibility of benefiting from the current study in conducting a similar study by linking the variable to other factors and knowing its effect or impact on them, such as achievement, intelligence, learning speed, and other factors.
6. The possibility of benefiting from the current study in conducting a comparative study on the level of visual perception in terms of gender, age, type of work, and place of residence.
7. Using various artistic and formative games as one of the methods used to develop visual perception skills (visual discrimination, visual closure, perception of spatial relationships) for kindergarten children.

Research Objectives:

The current research aims to identify:

1. Visual perception among preparatory stage students.
2. The significance of differences in visual perception among preparatory stage students according to gender (males, females) and specialization (scientific, literary).

Research Boundaries:

The current research is limited to preparatory stage students (males, females) (scientific, literary), morning study for the academic year (2024-2025), and in government schools in the center of Kut / Wasit Governorate.

Definition of Research Terms:

Visual Perception:

it define as a state of awareness and understanding of relationships and events through the senses. It is also a state of recognizing situations, helping to react appropriately in different situations. Another, defines visual perception as the ability to organize and interpret visual information that reaches the eye, allowing the individual to understand the shape, structure, and details of surrounding objects (8).

Theoretical Framework and Previous Studies

Theoretical Framework of Visual Perception

Visual perception is one of the cognitive mental processes and includes several sub-skills such as visual discrimination, visual closure, and spatial relationship perception. It is a complex process involving the reception, integration, and analysis of visual stimuli through complex mental activities. Operationally, it is the score obtained by a student on a visual perception test. Visual perception involves the process of comprehending, organizing, and analyzing visual sensory data



such as shapes, sizes, distances, and images. Fuad Bahi Al-Sayed considers the impression of visual images on the retina as sensation, and the connection of these visual effects to the central nervous system and their interpretation in terms of shape, color, size, and meaning estimation as visual perception (9).

Scientists, including Thurston, have found that visual perception holds the primary place in cognitive perceptual abilities and that perceptions, in general, play a significant role in forming an individual's mental, psychological, and social makeup. Specialists in the field of vision studies indicate that most of the information we obtain from the external world comes through visual perception, accounting for 40-70% of an individual's total informational resources. Visual perception dominates other forms of perception (10). Most of the information reaching the brain about the external world comes from vision, and visual perception constitutes the largest part of the information in the perceptual processes that an individual practices daily. In fact, visual information often overrides information from other sensory channels in cases of conflict. Visual perception is not merely a replication of the image on the retina; something more must occur beyond the reception of light stimuli by the eye to organize the overall sensory data into specific forms such as images and distinct objects (11).

Another scientist mentions four factors that aid in completing visual perception:

1. **Perceptual Visual Selection:** This involves distinguishing between variables that appear first and those that appear last when looking at shapes.
2. **Visual Perceptual Flexibility:** This refers to the ability to distinguish between similar and different sizes. This flexibility also involves the ability to perceive similarities between the directions and positions that shapes and objects occupy.
3. **Accuracy and Speed of Visual Perception:** This means the ability and speed in distinguishing different sizes, shapes, colors, and directions.
4. **Visual Perceptual Composition:** This is characterized by the perceptual ability known as visual closure, which relates to reaching conclusions from partial visual information.

Visual perception:

A. **Visual Search Process:** This process involves the precise identification of the target stimulus among other stimuli present in the visual field. For example, looking at a visual scene containing several geometric shapes requires focusing on the triangular shape. The eyes will scan the visual scene back and forth until the triangle is seen among the other geometric shapes. Scientists believe that the visual search process is divided into several types (12):

1. **Externally Generated Search:** This type of search occurs involuntarily for something sudden that appears in our visual field, such as the appearance of a flashing light like lightning.
2. **Internally Generated Search:** This type refers to the voluntary, planned search process for a specific stimulus with certain characteristics.
3. **Parallel Search:** This occurs when an individual wants to identify a specific stimulus among several other stimuli that share or differ from it in one or more characteristics, such as color, length, direction, shape, etc.
4. **Serial Search:** This type of search occurs when an individual wants to follow a specific stimulus through several stages or steps over a certain period.



B. Visual Recognition Process: This process involves the precise identification of a specific stimulus through certain features or specific characteristics that distinguish it from other stimuli present in the visual scene, such as the outer edges of a shape. For example, the edges of a triangle differ from those of a square, and both differ from the edges of a circle. Context plays an important role in the process of recognizing the shape, as context refers to the general pattern of visual scene stimuli, such as letters, numbers, shapes, birds, (13).

Context is divided into two types:

1. The set of stimuli surrounding the target stimulus that affects an individual's perception of this stimulus, as our perception of things is influenced by context.
2. The individual's previous experience with this context, meaning that previous experience with the context makes the individual interpret the shapes it contains based on past experiences, so that these shapes are associated with that context (14).

Gestalt Theory

Many thinkers and philosophers were interested in perceptual processes at the beginning of this century, most notably the thinkers of the Gestalt school, which is based on visual perception. The thinkers of this school reached a set of rules and laws that organize the external visual field. Among the most important results of this theory are (15):

1. The mind does not perceive details; if it encounters an incomplete detail, it automatically completes it. From this, we learn that visual perception is the perception of complete forms.
2. When a person perceives a shape, they perceive it as a shape against a background, and there is a set of rules that help them distinguish between the shape and the background.
3. The human mind is constantly seeking to gather similar elements. It discovers the surrounding elements and searches for a kind of proximity and similarity, making it easier to perceive them.
4. What a person perceives visually is what the mind can perceive. Visual perception is not a process limited to the visual system only, as some phenomena such as shape, size, light, and color emphasize the role of the brain in the process of perception (16).

Theories Explaining Visual Perception

1. **Theories of Shape Perception:** Researchers have proposed several theories to explain shape perception, but most agree that shape perception goes through three main stages:
 - **First Stage:** Light rays fall on the shape, revealing its features and the properties that distinguish it.
 - **Second Stage:** Light rays reflect from the shape to the eyes, carrying information about the shape.
 - **Third Stage:** Information is gathered in the retina and converted into neural signals that are sent to the visual processing centers in the brain cortex and processed perceptually.
2. **Theory of Color Perception:** There are two theories that explain how colors are perceived:
 - **Trichromatic Theory of Color Vision:** This theory states that individuals have three types of cone cells that receive light rays in the retina, each sensitive to specific wavelengths of light in the spectrum: red, green, and blue.
 - **Opponent Process Theory:** The founder of this theory, Ewald Hering, considered the pure primary colors to be red, green, yellow, and blue. The three types of cone cells receive light waves for the four colors, in addition to white and black, totaling six colors. Each of these three cell types is



specialized to receive stimulation for only two colors. When any of these cell types receive light waves for a specific color, its cells activate while ceasing to respond to the second color, called the opponent color.

3. **Theories of Distance and Depth Perception:** Several theories have focused on the process of distance and depth perception, the most important of which are:
 - **Empirical Theory:** This theory suggests that the process of distance and depth perception is acquired through learning. A newborn does not have knowledge of distance and depth but acquires it through experience.
 - **Gibson's Theory:** According to Gibson, the founder of this theory, there are two types of perception: direct and indirect. Direct perception means that visual stimuli are rich in various information that allows an individual to determine the depth and distances of objects, as this visual information received by the retina does not require mental representations to perceive depth. Indirect perception deals with perceiving depth from non-material things such as photographs and drawings.
4. **Hebb's Concept of Visual Perception:** Hebb believes that visual perception is a learned process, not an inherited one as the Gestalt theorists suggest. Perception, according to Hebb, occurs based on the stimulation performed by certain nerve cells in specific locations in the nervous system. Hebb places great importance on learning. "Perception is not a process of summarizing characteristics but an empirical definition and identification of a specific shape. This means using the qualitative details that distinguish the shape in the knowledge of the perceived" (17).
5. **Mental Theory:** This theory is attributed to Descartes, who distinguished between ideas of mental states existing in the self and things that are extensions of it. The perception of an extended thing can only be according to judgments that confer the qualities and sensory modalities of the thing. Therefore, perception is a mental process, not a sensory one. Berkeley went on to say that "estimating the distance of very distant objects is not a sensation but a mental sensation based primarily on experience." He also confirms that "the blind," in the case of regaining sight after surgery, have no idea of visual distance. All distant and close objects seem to them as if they are present in the eye, or rather in the mind (18).
6. **Phenomenological Theory:** The proponents of this theory believe that consciousness constructs and organizes perceptions. Therefore, they call on us to be content with describing what appears to consciousness in order to reveal the given without relying on any previous hypotheses or theories, such as the idea of substance in Descartes. Thus, perception for them is the possession of the internal meaning of the sensed thing before issuing a judgment. It is a mental concept, as Merleau-Ponty says, and a vital experience. Therefore, we find that perception is always incomplete without experience and is only achieved through attention. It is enjoyable in cases of emotion.
7. **Organismic Theory:** This theory is represented by Werner and Winer, who emphasize that the perception of space occurs through the combination of subjective and objective factors. It is based on the following assumptions:
 - The correspondence between the perceiving self and the intensity of the stimulus.
 - The interaction between the effect emanating from the object and the effect on the self.



It is clear from this theory that perception has an integrative character, as subjective and objective factors are fundamental in the process of perception (19).

Laws of Visual Perception

1. Laws of Shape Grouping:

- **Law of Proximity:** Elements close to each other are perceived as a single shape.
 - **Law of Similarity:** Similar elements come together to produce an organized shape.
 - **Law of Continuity:** Elements that follow in a curved or straight line are perceived as an organization of a single shape.
 - **Law of Closure:** Shapes that contain gaps in their perimeter are perceived as complete shapes.
 - **Law of Direction:** Elements that move in one direction are perceived as a single shape.
 - **Law of Preferred Form:** We tend to perceive this line as a circle better because the shape of the circle is better than this unclosed curve.
2. **Law of Shape Quality:** The shapes that are easiest and fastest to perceive are those that are characterized by simplicity, symmetry, and regularity.
3. **Law of Shape and Background:** Our perception of things is according to the organization of the shape and background. The shape is determined by the surrounding edges that distinguish it, while the background is the background in which the shape is located. The smaller area is perceived as the shape, while the larger area is perceived as the background (20).

Stages of Visual Perception

Visual perception goes through a series of steps and stages as follows:

- **Reception of Light:** Light enters through the cornea, then passes through the hole in the middle of the iris. The lens then focuses the light on the retina, which contains image receptors and light-sensitive cells.
- **Processing:** Electromagnetic energy (light) is converted into electrochemical pulses by the nerves, allowing visual information to travel along the optic nerve fibers to the brain, which interprets the signals.
- **Transmission:** Electromagnetic pulses travel from the optic nerve to the primary visual cortex located in the occipital lobe (at the back of the brain).
- **Organization:** Visual information is reorganized in the visual cortex so that it can be understood. We do this by using certain visual principles.
- **Interpretation:** This is the process by which visual stimulation is given the desired meaning. The temporal lobe determines what the object is, using both incoming information and memory, prior knowledge, motives, experiences, and context. Information is also sent to the parietal lobe, which tells the individual where the object is in the surrounding world (21).

Visual Perception Skills

1. **Visual Discrimination:** The ability to differentiate between one shape and another or to perceive similarities and differences between images.
2. **Visual Closure:** As mentioned in the laws of visual perception, visual closure means perceiving the whole from the part. A child with visual closure difficulty cannot complete a missing letter in a word or a word in a sentence based on the overall context of the sentence.



3. **Spatial Relationship Perception:** The ability to know one's position in the place they are in, the relationship between oneself and objects (buildings, roads, places), and the relationship between these objects themselves. Some call it geometric perception.
4. **Difficulty Distinguishing Between Image and Background.**
5. **Matching:** A concept referring to the ability to recognize the distinguishing boundaries of a shape from other similar shapes in terms of color, shape, pattern, size, and degree of clarity.
6. **Perceptual Constancy:** The visual percept does not change in its nature, shape, size, color, depth, area, or number, regardless of the change in the distance between the dimensions of its components or the viewing distance.
7. **Visual-Motor Coordination:** The coordination of the eye with the movement of the hands, which appears, for example, when trying to take and throw objects, as well as staying on the line when writing (22).

Factors Affecting Visual Perception

There are a number of physical and psychological factors that effectively influence an individual's visual perception. The most important of these factors are as follows:

Physical Factors Affecting Visual Perception:

- Interpretation of some surrounding objects by comparing them to known and related objects.
- Visual perception involves the ways in which the eyes, nervous system, and brain interpret the visual information surrounding the individual.
- The individual's tendency to see what they expect to see, including ignoring some stimuli and paying attention to others.
- Some factors such as emotions, motives, context, or setting, cultural background, and past experience all significantly influence perception.

Physiological Factors Affecting Visual Perception:

- Alcohol consumption: This leads to slowing down and changing the coordination of objects surrounding the individual, as well as distracting attention, focus, and the ability to make judgments.
- Aging: With age, an individual develops a set of diseases that affect vision, the most important of which are cataracts, farsightedness, age-related macular degeneration, retinal detachment, diabetic retinopathy, and other eye diseases associated with aging.

Previous Studies

1. **Study by Khalil (2019):**
 - "Visual Perception and its Relationship to Visual-Motor Coordination Skills in Children"
 - The results revealed a strong positive relationship between visual perception and visual-motor coordination ability.
2. **Study by Abdullah (2020):**
 - "The Effectiveness of a Training Program Based on Visual Perception in Developing Academic Skills"
 - The researcher used a training program to improve the visual perception of individuals with learning difficulties. The results showed a clear improvement in the academic skills related to reading and writing.



3. Study by Al-Kaabi (2021):

- "Analysis of Visual Perception Components in Light of the Cognitive Processing Theory of Stimuli"
- The study provided an explanatory model for the mechanism of visual perception within the cognitive theory, emphasizing the importance of context and prior experience in understanding visual stimuli.

4. Study by Li and Du (2023):

- "An eye-tracking study on visual perception of vegetation permeability in virtual reality forest exposure"
- This study uses eye-tracking technology to examine how individuals perceive vegetation permeability in virtual forest environments, aiding in the understanding of environmental design preferences and their impact on visual perception.

5. Study by Zheng and Zhang (2024):

- "Visual Perception Differences and Spatiotemporal Analysis in Commercialized Historic Streets Based on Mobile Eye Tracking: A Case Study in Nanchang Wanshou Palace, China"
- This study uses mobile eye-tracking to analyze differences in visual and temporal perception in commercial historic streets, providing insights into how individuals interact with historic urban environments.

Chapter Three: Research Methodology

The researcher employed the descriptive method, which is one of the most widely used types of research. This method involves an investigation that addresses an educational, psychological, or social phenomenon to diagnose it, reveal its aspects, and determine the relationships between its elements (22).

Research Procedures:

1. Research Population:

The research population included 5,032 male and female students from the preparatory stage for the academic year 2024-2025 in the center of Kut City, Wasit Governorate.

2. Research Sample:

The research sample consisted of 300 male and female students from the preparatory stage in Kut, selected using a simple random method with proportional distribution: 140 male students and 160 female students.

3. Research Instrument:

The researcher adopted the André Rey Visual Perception Test, designed by Swiss psychologist André Rey in 1941. This test was later developed and modified by Osterrieth in 1944, and it is sometimes known as the Rey-Osterrieth Test.

Rey-Osterrieth Complex Figure Test (23):

- **Objective:** The test aims to measure spatial visual perception skills and visual memory by copying and then redrawing a complex geometric shape.



- **Required Tools:** A white sheet of paper (A4), a pencil or pen, and a timer or stopwatch application.
 - **Application Steps:**
 - **Copying Phase:** Provide the student with the test sheet containing a complex geometric shape. Ask them to copy the shape accurately onto another white sheet of paper. Record the time taken to complete the copying.
 - **Free Recall Phase (after 3-5 minutes):** After completing the copying, collect the paper and ask the student to redraw the shape from memory onto a new sheet without looking at the original shape. Record the time taken for this phase as well.
 - **Scoring Method:** The shape is divided into 18 specific parts as defined in the original test. Each part is given a score ranging from 0 to 2 based on its accuracy and position (0 = missing or incorrect, 1 = inverted or inaccurate, 2 = completely correct). The scores for all parts are summed to obtain a final score for each phase (copying and recall).
 - **Interpretation of Results:** High scores in the copying phase indicate good visual perception ability. High scores in the recall phase indicate strong visual memory. Low scores may indicate difficulties in perception or visual memory.
 - The reliability coefficient was 0.87 using Cronbach's alpha, and the test has two types of validity: content validity and expert validity.
 - **Face Validity:** The test in its initial form was presented to 10 experts in educational and psychological sciences, and there was an 80% agreement on all test items, indicating that the test has face validity.
 - **Content Validity:** Content validity was extracted using several methods, including:
 - Extracting the discriminatory power of the test using the two extreme groups by taking the top 27% and the bottom 27% of the sample's responses and calculating Pearson's correlation coefficient between the two groups. All items were significant.
 - **Test Reliability:** The reliability of the visual perception test was verified using the test-retest method. The test was applied to a sample of 25 male and female students from the preparatory stage, and the test was reapplied after 14 days. The reliability of the visual perception test was extracted using Pearson's correlation coefficient, which was 0.87, indicating that the test is reliable.
4. **Test Application:**
- After extracting the psychometric properties of the visual perception test, it was applied to a sample of 300 male and female students distributed among preparatory stage students for morning studies. The test in its final form was distributed to the learners in person at their schools, and the application was completed in February and March.
5. **Statistical Methods:**
- The following statistical methods were used in accordance with the objectives of the current research (24):
 1. Chi-square equation
 2. One-sample T-test
 3. T-test for two different samples
 4. Pearson correlation coefficient
 5. Cronbach's alpha equation
 6. Percentages



Results and Discussion

Result of the First Objective: Identifying Visual Perception among Preparatory Stage Students

The first objective indicates that preparatory stage students possess the ability of visual perception. A one-sample t-test was used for this analysis.

Table (1):- the table shows the result of t test.

| Test | N | Mean | Standard Deviation | Hypothetical Mean | Calculated t-value | Tabulated t-value |
|-------------------|-----|---------|--------------------|-------------------|--------------------|-------------------|
| Visual Perception | 300 | 14.8067 | 3.76251 | 11.5 | 15.222 | 1.960 |

It is observed from the table that the tabulated t-value for preparatory stage students in visual perception is statistically significant at a significance level of 0.05. Therefore, this result confirms that preparatory stage students possess the ability of visual perception. This aligns with Arnold's theory, which indicated the potential for developing visual perception through creative work.

Second Objective: Identifying Differences in Visual Perception among Preparatory Stage Students Based on Gender

To achieve the second objective, the researcher used an independent samples t-test.

Table (2) shows the t-test for the difference between the mean scores of males and females on the visual perception test.

| Test | Gender | N | Mean | Standard Deviation | t-value | Degrees of Freedom | Probability Value | Conclusion |
|-------------------|--------|-----|-------|--------------------|---------|--------------------|-------------------|---------------|
| Visual Perception | Male | 140 | 94.97 | 13.09 | 2.37 | 298 | 0.437 | No difference |
| | Female | 160 | 92.60 | 13.30 | | | | |

From the table above, it is clear that there are no statistically significant differences in gender between males and females on the visual perception test. The researcher interpreted this result as the educational opportunities, amount of training, and curricula being the same for both males and females, making the nature of visual perception equal between them.

Third Objective: Identifying Differences in Visual Perception Based on Branch (Scientific, Literary)

To verify the hypothesis, the researcher used an independent samples t-test.

Table (3):- The tables shows the result of an independent samples t-test.

| Conclusion | Probability Value | Degrees of Freedom | t-value | Standard Deviation | Mean | N | Branch | Test |
|---|-------------------|--------------------|---------|--------------------|-------|-----|------------|-------------------|
| Differences exist in favor of the scientific branch | 1.44 | 298 | 2.76 | 15.85 | 95.33 | 150 | Scientific | Visual Perception |
| | | | | | 88.98 | 150 | Literary | |



The table shows that there are differences in the sample in visual perception in favor of the scientific branch. This is attributed to the method of thinking required for preparing scientific assignments and lessons, which need more use of thinking than memorization and rote learning.

Conclusions

1. Preparatory stage students have the ability of visual perception, as indicated by their responses on the visual perception test.
2. There are no differences between males and females in visual perception, as both genders advance to the preparatory stage based on their own desires. This means that motivation and knowledge are equal among students of both genders.
3. There are differences in visual perception among preparatory stage students according to the branch (scientific, literary). This is due to the difference in teaching and training methods between the scientific and literary branches, which plays a greater role in acquiring different experiences. The scientific branch has the ability to utilize visual perception to encourage ideas and implement them in a practical way.

Recommendations

1. Introduce modern teaching methods that develop visual perception in Iraqi schools.
2. Develop tests in the preparatory stage to enhance visual perception among students.
3. Work on developing and updating the educational curricula for fine arts institutes to include multiple methods in visual perception to improve the learner's efficiency in visual perception.

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