Patterns of thinking according to Hermann's theory of the imperative style and their relationship to learning the skill of dribbling and peaceful shooting in basketball for female students

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Abstract

The research included an introduction to the research and its importance, which emerged from the necessity of identifying female students’ personality types through their thinking styles according to Herman’s theory and its relationship to learning a complex basketball skill in order to better achieve the educational goals of the physical education lesson. The research aimed to identify the thinking patterns of High school students and the relationship between thinking styles according to Hermann's theory in learning the complex skill (dribbling and shooting) and through the imperative method followed in High schools for girls. Assuming that there is a statistically significant correlation between the patterns of thinking according to Hermann’s theory and the imperative method followed in the physical education lesson in learning the complex skill (dribbling and shooting). The research sample consisted of (90) female students, with an average age of 17 years, from the fifth grade of High school at Al-Firdaus High School for Girls / Baghdad. The researchers used the descriptive approach in a survey method because it suits the nature of the research in revealing the results of the field experiment and its relationship to a personal psychological phenomenon related to the research sample with one equal group and with two post-tests, the Hermann Scale of Thinking Patterns test and the basketball skills test. The researchers reached the conclusion that the executive style (B) came in first place in the strength of the relationship between it and the composite skill performance in basketball, at a level of (good) using the traditional imperative method in teaching the skill. The objective style (A) also came in second place in the strength of the relationship for the previous variables. Same level (medium). The imaginative style (D) came in third place, and then the emotional style (C) came in fourth place in terms of the strength of the relationship between the mentioned variables, at a level of (weak). The researchers recommended the necessity of subjecting students and learners to personal, physical, mental and psychological tests before subjecting them to education and training processes in order to choose the most appropriate effectiveness for them, and the educational and training methods and means appropriate to the individual differences between them. When executive individuals appear in tests of thinking styles, educational and training methods that differ from those that It is applied to other individuals. They also recommended conducting other similar research on different samples in terms of activities, age groups, educational levels, and gender. Disseminating the results of the study to educational and sports institutions to benefit from the results it produced.

Keywords

Patterns thinking, Hermann's theory, basketball

Introduction:

Despite the development and progress made in teaching methods, methods, strategies, the educational process and its modern means, and in line with the progress and development taking place in the areas of life and advanced societies...
Thinking continues as a person continues to live. It begins internally by using information obtained from the surrounding environment as input and then combining it with previous information, images and symbols stored in memory for the purpose of acquiring new knowledge or knowledge.

Every human being is dominated by thinking about one of the four sections that Hermann placed within his theory, where he divided the brain into four regions that are symbolically interconnected, and not physiologically. Each region is specialized in a specific way of working of the mind and works together to form the overall brain, where one or more regions are predominant or dominant.

We find that some tend more to analysis, numbers, and situation, some to creativity, structure, and strategy, some to discipline, implementation, accuracy, and respect for time, and some to human meanings and feelings. Herman conducted a questionnaire on 500,000 people and concluded that every person has at least one basic preference that dominates his thinking. He found that 90% of people think in four sections, 60% in only two sections, 30% in three sections, 7% in one section, and 3% think in four sections equally. The Hermann scale does not mean issuing a judgment on a person. It does not measure intelligence, abilities, or merit. Rather, it only measures the way of thinking and how people deal with each other. A quick scale can be easily understood and divides thinking patterns into the following:

- Objectivity style: corresponds to the function of the accountant and investigator
- Implementation pattern: Corresponds to the job of security guard and janitor
- Poetic style: compatible with the job of kindergarten teacher and nanny
- Creativity style: compatible with the job of the painter

The features and interests of each of the four styles can be clarified according to the following table (1):

- Thinking has many concepts that explain its meaning. It means contemplating or examining the mental state and following thoughts toward a specific goal or interpreting matters and symbols in a way that leads to a logical conclusion (7).
- It is stated in the educational dictionary that thinking is every mental or mental activity that differs from sensation and sensory perception or goes beyond them to abstract ideas (6).
Here the importance of the research appears in identifying the relationship between the traditional imperative method followed in the physical education lesson and the multiple patterns of thinking according to Hermann’s theory for High school students, which relied on dividing the brain into four parts, as each part is concerned with a group of mental functions through which the pattern of thinking can be identified. For each person in terms of whether they are objective, executive, emotional, or creative, and some of them combine two or more styles.

The problem of the research appears in the fact that many teachers complain about the lack of attention of students in class during the lesson and the way they interact with it. Some of them are good at studying and do not miss small details, others focus on some of the main and general points only, and some are troublemakers who love movement and chaos and do not pay attention to the teacher’s instructions.

Thinking about the above is the differences that exist in the personalities and thinking of each of them and what is related to the nature of the student, his environment, his upbringing, and his social and family situation. Here the teacher faces difficulty in changing them completely by designing the lesson in a way that does not suit all the personalities and thinking patterns of his students, and this leads to some of them losing interest in the subject. In addition, its content, as the students’ reactions are not the same, but each differs according to his personality and thinking. Therefore, the teacher must understand all these styles and the personalities of his students in order to understand and determine their needs and thus design the lesson and choose the appropriate teaching method in a way that suits it to obtain better learning results in order to shorten time and effort and make room for greater individual activity.

Hermann's model (the four-way thinking or the thinking compass) is one of the most important models used in studies on learners. Here, the researchers see the necessity of identifying the extent of the relationship between the student's personality types by identifying their thinking styles in order to better achieve educational goals, and the necessity of using this model on High school female students. Because of their different and multiple personalities and thinking as a result of the critical age stage they are going through, the research objective: Identifying the relationship of thinking methods according to Hermann’s theory through the imperative method used in schools to learn the skill (dribbling and shooting) in basketball for female students, and Identifying the thinking patterns of High school students according to Hermann’s theory.

The research hypotheses: There is a statistically significant correlation between thinking patterns according to Hermann's theory and the imperative method followed in the physical education lesson in learning the skill (dribbling and shooting) in basketball. The fields of research are:

- Human field: Preparatory stage students from Al-Firdaws High School for Girls / Baghdad / Al-Amriya / First Karkh Education Directorate.
- Time field: (1/3/2022) to (1/4/2022)
- Spatial field: Al-Firdaws Girls High School Stadium and Hall / Baghdad / Al-Amriya / First Karkh Education Directorate.

**Definition of terms:**

**Hermann's theory:** It is a theory developed by Hermann, which is called the brain compass, as it divided the brain into four parts, surpassing the theory of the scientist Roger Sperry, who divided...
the brain into two halves, and McLean's theory, which divided the brain into three sections, where Hermann combined the two models into one model called the Hermann quadripartite model, where each section is specialized. With specific mental functions and a specific style of thinking, they are objective, executive, emotional, and creative. Each person can delve into a specific style of thinking or combine two or more styles.

**Thinking:** It is a series of daily, internal, conscious, mental, and sequential operations of invisible activities based on knowledge stored in the mind and resulting from a treasury of symbols and images in an organized and precise manner after searching for what exists in the environment in order to achieve its real goal, which is to find effective solutions to problems resulting from complexity. Environmental is every conscious process that an individual performs after becoming aware of the surrounding environment.

**Imperative style:**
One of the interesting methods in the physical education lesson, and it requires a great effort from the teacher. He prepares the lesson with all its parts, determines the skills and activities to be taught, and the students apply what they have learned according to the teacher's instructions and orders. It is used if the students are young, if the skill is difficult and dangerous and if the teacher is new to the school and is used at the beginning of the school year. This method takes into account security and safety factors and helps facilitate control over the students. Among its shortcomings is that it does not take into account individual differences and does not allow the student to choose the appropriate group to join in accordance with his physical and skill capabilities.

**Method and procedures:**
The researchers used the descriptive method in a survey method because it suits the nature of the research in revealing the results of the field experiment and its relationship to a personal psychological phenomenon related to the research sample. Whereas the descriptive method means (following certain logical steps in dealing with problems or phenomena or treating scientific issues to reach the discovery of the truth)

**Research community and its sample:**
The research community included female students in the fifth grade of High school from Al-Firdaws High School for Girls in the Al-Amriya area / in the city of Baghdad / the First Karkh Education Directorate. This school was chosen because it provides the necessary financial capabilities to conduct the research experiment, a closed hall, and a basketball court. There are also female teachers for physical education and regular lessons within the weekly schedule and actual practice of the physical education lesson and adherence to its timing.

The research sample was also selected from the fifth grades of High school, the scientific branch, which numbered 111 female students, divided into 3 sections, where each section included 37 female students. After excluding the 21 female students from the exploratory experiment, the number of participating female students within the main experiment sample became (90) female students who were chosen randomly. From each division to apply the main experiment to them and achieve the objectives and hypotheses of the research. The students were distributed into the types according to their answers to the questionnaire, as shown in Table (2).

**Table .2** shows the four thinking styles according to Herman’s theory, the number of female students who used each style, and the percentage of each style out of the total sample.

<table>
<thead>
<tr>
<th>Thinking styles</th>
<th>Number of female students using the style</th>
<th>Percentage of female students out of the total sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Objective</td>
<td>8 female students</td>
<td>%9,4</td>
</tr>
<tr>
<td>B Executive</td>
<td>27 female students</td>
<td>% 30</td>
</tr>
<tr>
<td>C Emotional</td>
<td>40 female students</td>
<td>% 44</td>
</tr>
<tr>
<td>D Imaginative</td>
<td>15 female students</td>
<td>% 16,6</td>
</tr>
</tbody>
</table>

**Modern Sport** [https://jcopew.uobaghdad.edu.iq/](https://jcopew.uobaghdad.edu.iq/)
Tools and devices used and means of collecting information:

Research tools and devices used: (electronic calculator (HP), photographic camera, CDs, means of collecting information, Arab and foreign sources and references, the Internet, tests used, questionnaire form, assistant work team)

Tests used:

Herman's thinking styles test
The researchers used the Herman Test for Thinking Styles, which includes dividing the brain into four types: (A) Objective, (B) Executive, (C) Emotional, and (D) Imaginative. The scale consists of 56 items. Each item represents one of the four previous patterns. In front of each item is one of the letters indicating a specific pattern (D, C, B, A). Each answer is given as yes (10 marks) and each answer is given as no (zero marks). Then The grades for each of the four letters are collected separately, where the lowest total that can be obtained is (0) and the largest total that can be obtained is (140) grades. Then the total grades are recorded in a table where the highest total of grades represents the first dominant pattern and the lowest total of grades represents the weak.

Validity of the test
The researchers used the content validity index by presenting the test to a group of experts in the specializations of testing and measurement, sports psychology, and basketball coaches. The experts agreed that all items of the scale are valid for measuring the studied phenomenon, as the validity index here is (when a person related to the subject decides that the scale is appropriate for the characteristic to be measured) (8)

Scale stability
The researchers adopted the split-half method (which is dividing the test items into two halves, the first half containing the odd-numbered items and the second half the even-numbered items) (5). The researchers used the questionnaires of the exploratory experiment sample, which numbered 20, to calculate the reliability coefficient of the scale, and a coefficient was extracted. Reliability through finding the correlation coefficient between the results of the first (odd) and second (even) halves, where the Pearson correlation result between the two halves reached 2.711 and an error rate of 0.05, which is a high reliability coefficient that can be adopted.

Composite skills test
- Test name: dribbling and shooting peaceful
- Purpose of the test: To measure the level of dribbling and aiming performance
- Description of performance: The student approaches the center of the court with dribbling, advances the ball, and then makes a peaceful movement to score directly into the basket.
- Registration: The (3) experts evaluate the performance by giving grades starting from (0) as the lowest grade, and (10) as the highest grade obtained by the student.

Exploratory experience:
Thursday, 3/3/2022, was set to conduct the initial exploratory experiment on (20) female students who were randomly selected from the sample, based on the Hermann test form, to ascertain the ease and difficulty of the phrases and the extent of their understanding by the female students and the assistant staff, and to identify the time taken by the female students to answer. On the questionnaire sections, providing the required capabilities, and training the assisting staff to perform the test, record points, and calculate the results. The results of the exploratory experiment questionnaires were used to calculate the reliability of the test.

Tuesday, 15/3/2022, was also scheduled to conduct the second exploratory experiment on the combined basketball skill test (dribbling and ladder shooting) on the same (20) female students of the first exploratory experiment, in order to determine the required and sufficient tools for the test, learn about its difficulties, and train the assistant staff on Performance, recording and calculating results.

The goal of the exploratory experiment:
- Identify the suitability of the tests chosen for the sample level.
- Identifying the difficulties that researchers may face in the main experiment and how to confront and overcome them.
- Identifying the ability of the assistant team when performing tests and how to complete the registration process.
- Identify the availability of the necessary capabilities and tools required to perform the tests.
- Identifying the time taken and required for each test and the performance time for the main experiment, as the first student to submit the form needed 25 minutes.
- Benefiting from the results obtained in extracting the validity and reliability of the Herman Thinking Styles Test on female students.

**Main experience:**

After the goal of the research was determined, the tests used were determined, their coefficients were extracted, and the opinions of experts were taken about their suitability for the research sample according to the scientific conditions for them, namely the selected (Hermann Thinking Patterns Test and the Skills Test for Compound Skill in Basketball), all the required requirements were determined, and the auxiliary work team was prepared and to obtain an accurate application of the tests. The school administration was also contacted, its approval was obtained, the available capabilities were identified, and the sample required to complete the research experiment was determined. After conducting exploratory experiments on the tests and ensuring their success, the researchers set Thursday, 10/3/2022, as the date to conduct the main experiment on the female students of the fifth preparatory stage, branch. Scientific study at Al-Firdaws Girls’ High School / Al-Amriya / Baghdad / Al-Karkh First Education Directorate in order to achieve the objectives of the research, at exactly ten o’clock in the morning and within the weekly schedule of the physical education lesson and in the classroom and in the presence of the assistant staff and all of the sample’s (90) female students after being excluded. The students of the exploratory experiment, where the Hermann Test of Thinking Styles form was distributed to the students to answer the test items within a time of 30 minutes from the beginning of the test until its completion for the last student. After transcribing the information, extracting the results, and treating them statistically, the students were distributed into four groups, each according to their style of thinking. The four that Herman identified in his theory, according to their choices and answers to the test items.

**Statistical methods used:**
- Arithmetic mean
- standard deviation
- Pearson correlation coefficient
- Percentage law

**Results:**

The results are presented, analyzed and discussed according to the data obtained by the researchers for the tests conducted on the research sample and using the appropriate statistical methods mentioned above. The researchers used the Pearson correlation coefficient to find the relationship between thinking patterns according to Herman's theory and the performance of the complex skill in basketball for female students.

<table>
<thead>
<tr>
<th>Thinking styles</th>
<th>Arithmetic means of the herman test</th>
<th>Arithmetic means of the skill test t</th>
<th>Correlation coefficient Between them</th>
<th>Relationship type Between them</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Objective</td>
<td>112</td>
<td>6,6</td>
<td>%50</td>
<td>Medium</td>
</tr>
<tr>
<td>B Executive</td>
<td>117</td>
<td>7,3</td>
<td>%65</td>
<td>Good</td>
</tr>
</tbody>
</table>

Table .3 shows the arithmetic means of the Herman test and the skill test and the correlation between them for each of the four thinking styles and the type of that relationship.
Table No. (3) shows the arithmetic means and the correlation coefficient between the Herman test for thinking patterns and the skill test for the complex skill in basketball. It also shows the order of the thinking patterns used by the female students in the sample, where the executive style took first place in use at a rate of (65%), followed by the objective style in second place. With a percentage of (50%), the third place went to the imaginative style, with a percentage of (43%), while the fourth place went to the emotional style, with a percentage of (30%).

From the above, and through Table No. (3), we note that the relationship between the executive style (B) and composite skill performance in basketball is considered a relationship of a good level according to the strength of the relationship between the various variables, as the correlation between them reached 68%, and this degree showed that it is the strongest relationship in relation to relationships. The other connection to this study is that the combined skill performance in basketball, which combines more than two skills, requires multiple mental and physical abilities, such as coherence, compatibility, and the ability to find the appropriate way to implement them, as well as the accuracy required in performance.

The artistic skill performance of any activity, whether individual or group, must be performed according to the artistic paths required by that performance, mixed with rhythm and flow that emphasizes the kinetic interconnection between the parts of the movement or group of movements in the complex skill performance, as shooting a basketball is one of the skills that most requires precision of performance. This is due to the small area of shooting relative to the player, the ball, and the distance in which he performs, in addition to the importance of shooting in deciding matches, which is the culmination of the overall skill performance as a whole, and this confirms the reality of the relationship that emerged from the study, as executive individuals have the ability to organize stimuli in the general and sports environment and they have the ability. They are able to find appropriate ways to perform in the best way, especially in ways that can shorten time, effort, and distances. They are also distinguished by the ability to accurately execute through precise procedures in organizing the stimulus and perceiving it, and have strength in execution through effective methods of performance.

It was also clear in Table No. (3) that the objective type (A) came in second place in terms of the strength of the correlation relationship with skill performance, with a correlation rate of 50%, which is a moderate relationship heading towards weakness in terms of the strength scale according to the Pearson correlation coefficient. It is logical that this relationship comes in second place in terms of strength after the executive style and is close to it because the individuals of this style are characterized by characteristics related to the ability to analyze and evaluate stimuli and situations in the environment and deal with them according to an objective method that relies on numbers in making decisions, which gives important support for skill performance according to data and constants. The technical requirements (technique) and the biomechanical laws of kinetic performance impose it. Although the complex performance in basketball is often subject to change because it is linked to the speed of change in the complex environment of play, the technical requirements (technique) remain imposing themselves on the result of the performance. We cannot expect the player to use some type of Types of strikes that do not suit the required situation and achieving correct aiming without skill performance that regulates the correct exertion of force and the paths in which it travels if the body and limbs are in incorrect positions that do not suit the requirements of aiming. This is what can be achieved through the availability of capabilities that can identify one’s own capabilities and requirements. In sports situations, preference remains for the executive style due to its ability to control these requirements, choose
the best method, and implement it more accurately than the other styles.

As for the third place in terms of the strength of the correlation relationship, it was for the imaginary type (D), as is clear in Table No. (2), with a rate of 43%, which is a weak degree in relation to the relationship between the variables according to the Pearson correlation coefficient, and it is a logical result in terms of its sequence, as the individuals of this type are characterized. It has strategic thinking qualities that go beyond artistic skill performance, which is determined by the requirements of the kinetic paths of skill (tactics). In addition to the fact that it relies on imagination in forming kinetic images and decisions related to kinetic performance, it relies on seeing models of star athletes and emphasizes blind imitation of them without consideration or interest in analyzing the movement and planning its performance. Through correct learning methods as well as neglecting the accuracy of performance, the result is that the occurrence of some errors and distortions in technical performance is more likely to occur as a result of the imaginative factor overcoming the objective and executive factor that relies on organized mental and kinetic processes and which is essentially required for individual and complex skill performance in the game of basketball.

The emotional type (C) came in fourth and last place in the strength of the correlation relationship, with a score of 30%, which is a weak relationship between the variables of the study, according to Pearson. The emotional type carries human characteristics related to the strength of feelings and sensations and their connection to the influence of the human environment. Practicing the educational and training process comes with a simple pattern and procedures. It may not, in fact, reach the level of obtaining important scientific foundations in learning and sports training, namely the effect of learning and the effect of training, and this is what successful individual and group skill performance in basketball requires in terms of continuous repetition and qualitative training that leaves a clear, influential and long-lasting impact on the beginner and the player. In addition, the emotional aspect can affect the dispersion of thoughts during learning and training procedures, despite the desire and motivation that can be obtained in learning. The learner or player may need a high level of desire and motivation, but at the same time he needs a high-level objective and executive mental presence to first know what the details of the skill are, how to organize them in his mind, and how to make the appropriate kinetic decision according to the correct image he has resulting from the storage. Organization, correct perception, and the correct educational and executive method. Based on what was previously explained and clarified, the research has achieved the objectives of the study for which it was conducted.

As indicated by a study (Hassan and Alwan, 2022) “that there is a significant correlation between models of cognitive representation and problem-solving skill of third-year students in the College of Physical Education and Sports Sciences for Women, there is a significant correlation between the cognitive representation models and the blocking skill of the research sample, and there is a contribution rate of models of cognitive representation and problem solving skill in the performance of the blocking skill of the research sample” (9).

As indicated by a study (Nada) “The researcher reached the conclusion that harmonic exercises have an impact on the development of motor abilities, as well as the emergence of differences between pre and post-tests of the variables in accordance with the specificity of motor ability-skill and the purpose of the tests in terms of time and degree”. (10)

As indicated by a study (Nada) “The researcher concluded that the competitive exercises of the performances influence developing the transitional speed and agility, as well as it proved its effect on all research variables, the research variables showed differences in favor of the experimental group in the posttests, a development was showed in the control group but not at the level of the experimental group in the research variables.” (11)

**Conclusions:**

According to the above and what the researchers reached, the following conclusions were made:

- The executive style (B) ranked first in terms of the strength of the relationship between it and
the complex skill performance in basketball, and at the level of (good) the traditional American style of teaching the skill.

- The objective type (A) came in second place in the strength of the relationship for the same previous variables at an (average) level.
- The imaginative style (D) came in third place, then the emotional style (C) came in fourth place in terms of the strength of the relationship between the mentioned variables, at a level of (weak)

**Recommendations:**
According to the above and the results reached by the researchers and in light of the previous conclusions, they made the following recommendations:

- It is necessary to subject students and learners to personal, physical, mental and psychological tests before subjecting them to education and training processes in order to choose the most appropriate effectiveness for them, and the educational and training methods and means appropriate to the individual differences between them.
- When executive individuals appear in tests of thinking styles, educational and training methods that differ from those applied to other individuals must be chosen.
- Conduct other similar research on different samples in terms of activities, age groups, educational levels, and gender.
- Disseminating the results of the study to educational and sports institutions to benefit from the results it produced.

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أنماط التفكير وفق نظرية هيرمان بالأسلوب الأمريكي وعلاقتها بتعلم مهارة الطبطبة والتهديف السلبي

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جامعة بغداد – كلية التربية للعلوم الصرفة ابن الهيثم – شعبة النشاطات الطلابية

المستخلص البحث

اشتمل البحث على مقدمة البحث وأهميتها والتي ظهرت من خلال ضرورة التعرف على أنماط شخصية الطلاب من خلال أساليب تفكيرهم وفق نظرية هيرمان وعلاقته بتعلم مهارة مركبة بكرة السلة التي تتضمن الطبطبة والتهديف وفق نظرية هيرمان للأسلوب الأمريكي المتبوع في المدارس الاعدادية للبنات. وعلى فرض أن هناك علاقة واقعية بدلالة إحصائية بين أنماط التفكير وفق نظرية هيرمان والأسلوب الأمريكي المتبوع في درس التربية الرياضية في تعليم المدارس الاعدادية للبنات، وعلى فرض أن هناك علاقة واقعية بدلالة إحصائية بين أنماط التفكير وفق نظرية هيرمان والأسلوب الأمريكي المتبوع في درس التربية الرياضية في تعليم المدارس الاعدادية للبنات، وعلى فرض أن هناك علاقة واقعية بدلالة إحصائية بين أنماط التفكير وفق نظرية هيرمان والسلوك المتبوع في درس التربية الرياضية في تعليم المدارس الاعدادية للبنات، وعلى فرض أن هناك علاقة واقعية بدلالة إحصائية بين أنماط التفكير وفق نظرية هيرمان والسلوك المتبوع في درس التربية الرياضية في تعليم المدارس الاعدادية للبنات.

المعارف الميدانية:

تم استخدام تطبيق جهاز الفوتوسكيك المضيء لحالة أثر استغلال الطريقة المتبوع في تعليم المدارس الاعدادية للبنات. لقد أُظهَر الباحثان ان النمط التنفيذي B جاء بالمرتبة الأولى في قوة العلاقة بينه وبين الأداء المعياري المتبوع في درس التربية الرياضية فيتعليم المدارس الاعدادية للبنات. كما جاء النمط الموضوعي A بالمختصر A في قوة العلاقة المتبوع بينه وبين الأداء المعياري B والمختصر B في النمط الموضوعي D بالمختصر C للمستوي (متوسط). وبناءً على النتائج المكتوبة، يُ訪れ إلى خيامان بحث، يتم اختيار أساليب تعليمية وتدريبية تختلف عن تلك التي تطبق على الأفراد الآخرين. كما أوصى الباحثان بجراحات وجود نماذج متميزة من حيث العوامل والصفات المشتركة والمهارات والقيم المهمة. وتعمل النتائج على المؤسسات التعليمية والرياضية والاستفادة من النتائج التي خرجت بها.

الكلمات المفتاحية:
أنماط التفكير، نظرية هيرمان، كرة السلة