

The value-focused thinking skills of students of the College of Education for Pure Sciences at Ibn Al-Haitham Baghdad University in Iraq

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Abstract

The key objective of the research is to identify the value-focused thinking skills of the students of the College of Education for Pure Sciences / Ibn Al-Haitham. The current research adopted the descriptive approach, as the research sample included (136) male and female undergraduates from the Faculty of Education for Pure Sciences / Ibn Al-Haitham / Baghdad University from the Department of Chemistry (4th class), by (70) male and (66) female students. The students were selected randomly. Moreover, the research tool, consisting of testing the skills of value-focused thinking from (32) questions divided into four skills, was prepared. The results revealed that the sample of the current research have value-focused thinking skills and there are statistically significant differences in the skills. The researcher adopted the statistical bag (spss) to process the results. As a result, the researcher recommended the establishment of introductory conferences and seminars for undergraduates to help them know the skills of value-focused thinking and its importance.

Keywords:

thinking skills, value-focused thinking, testing value-focused thinking skills, undergraduates of the Faculty of Education for Pure Sciences.

Today, the environment faces real risks owing to scientific, technical, industrial and urban progress, as well as increasing rates of desertification and nuclear expansion, since human actions had a serious and negative impact on the environmental systems on our planet. As a result, the global, regional and local interest in the environment has become since the world felt the risks to the environment. Thus, Recently, it has become more important than ever to focus on value-focused thinking. One of the reasons for this worry is because it restricts the predominance of behavioral patterns among young people and college students

nowadays that are at odds with Islamic norms. The value-focused thinking is a central topic for students, which in turn is directly reflected in their academic and practical lives, as the university environment forms a fertile climate for the student to develop his personality and raise his level of thinking, his sense of value and self, and develop his skills to achieve himself on a healthy and effective basis.

This is mirrored in his personality, and he succeeds in a great degree of social adaptability and using the opportunities at hand to build his personality. The student inside the university works to achieve a kind of

balance between him and his surrounding environment in order to fulfill his individual, social and academic needs and establish social relationships based on influencing and being influenced by others. Through reviewing previous research and studies, as well as consulting experts in methods of teaching chemistry, educational psychology, chemistry science, and interviews made with undergraduates of the Chemistry Dept, the researcher concluded that the students lack interest value-focused thinking skills. Therefore, this study allowed a profound consideration of the skills of value-focused thinking by answering the following question: To what extent the students of the College of Education for Pure Science / Ibn Al-Haitham in Iraq know the skills of value-focused thinking?

The research importance

One of the objectives of education in the twenty-first century is to educate and prepare students for careers in science by giving them access to scientific experiences and tools. (Salma, 2019: 18). One of the modern concepts in sustainable development is sustainable thinking, which requires four modes of thinking. These concepts are more than just a set of procedures or knowledge that must be acquired by individuals, but rather a conceptual framework for exploring complicated system-based analyses of sustainability issues and potential solutions. Four specific dimensions of thinking have been identified, which provide an opportunity to enhance research on sustainability, education, and evaluation topics: (Systemic Thinking, Strategic Thinking, Futuristic Thinking, and Value-focused thinking), (Warren et al, 2014: 7)

The values and skills of value-focused thinking are vital in the life of the individual and society, because they are closely related to the process of socialization and the educational process, because they deal with human behavior and the positive or negative effects that result from this behavior in life (Abdel Sada, 2022:11). Ethics and values, wherever found, are the basis for the stability and survival of society. Although the philosophy of morals and values falls within the focus of attention of psychologists and sociologists, it did not receive sufficient attention except in periods described as intermittent (Al-Waeli, 2018: 32).

It is to say that solving environmental problems ultimately depends on the value-focused thinking because it counts on the student's effort to be aware of the different moral aspects. Scrutinizing the issues of ethics and profiting from the various viewpoints adjacent are one of the factors that qualify the person to make sound decisions. The student's capacity to follow a strategy in thinking and acting while making any decision relating to his future or the numerous issues of his life continues to be the most crucial and significant aspect in decision-making. The cognitive and emotional component of evaluative thinking, together with its abilities, reflects the student's beliefs about what is good or wrong and allows him to consider the interests of others. (Majid, 2022:8).

Hence, such thinking helps him develop his character in accordance with conventions, traditions, beliefs, and standards so he may maintain the environment (Al-Juban, 24:2012). It can be pointed out that the stage of university education directly precedes the stage of assuming responsibility for adult life, where some call it the stage after puberty or the stage of youth (Zahran, 2005: 410). University is one of the important institutions, being an academic, social and cultural center that interacts with a very critical stage in the learner's academic life. It achieves the student's desires and needs through their willingness and being the beating heart of the community and its efficient method of advancement in all sectors. It could be a key segment because it makes the leaders of the future. University contributes to building the learner's personality through the curricula it offers, in addition to the human relations and social interaction it provides. Therefore, it can be said that the learner's personality crystallizes and matures during the university preparation period, which includes attitudes, values, and mental abilities, in addition to his various needs and motives. (Al-Khazraji, 2007: 5). The independence and source of intellectual and cultural radiation are the most important characteristic of this stage which is responsible for the progress and development of society (Dawoud, 2015, 22).

The research gains theoretical scientific importance as being:

- 1- The pioneering attempt in Iraq and the Arab world, as far as the researcher knows, is interested in identifying the value-focused thinking skills of

undergraduates of the College of Education for Pure Sciences / Ibn Al-Haitham.

- 2- This research provides a clear vision of the concept of value-focused thinking skills and its role in solving environmental problems and climate change, in addition to highlight its role in achieving sustainable development.

The research gains applied importance with the following points:

1. The undergraduates of the Department of Chemistry and the rest of the faculties of education, as well as those specializing in chemistry, are aware of the skills of value-focused thinking.
2. The results of the current research may benefit researchers and students of primary and higher studies who wish to study the variables of the results that the research will discover.
3. The results of the current research are of benefit for the curricula maker in the Ministries of Education and Higher Education and Scientific Research by focusing on the skills of value-focused thinking and including them in the content of the chemistry textbook in the future.

Defining the terms

The value-focused thinking skills are defined by:

(1): (Fasko, 1994):

These skills are the student's ability to understand what is needed intellectually when they discuss ethical issues and values. Students should have a good background in understanding ethical principles and values appropriate to any situation, and acquire the intellectual skills that enable them to apply these basic principles. It also includes the ability to identify the appropriate principles for any situation and the acquisition of intellectual skills that enable them to apply these principles in a conscious manner on any issue. (Fasko, 1994: 54).

(2): (Wiek et al, 2011)

It is values-focused thinking, directed thinking, and ethical thinking. The value-focused thinking requires the concepts of justice, fairness, social safety, and ethics, as well as understanding the differences among these concepts and within cultures, and how using

these ideas helps with problem-solving. (Wiek et al, 2011: 209). The researcher adopted a theoretical definition of value-focused thinking skills.

The value-focused thinking skills are procedurally defined as: They are the total score obtained by the responding student (sample) by answering the questions of the value-focused thinking skills test prepared by the researcher for the purposes of the current research. It consists of (32) questions divided into four skills of value-focused thinking: namely: (assessing the entire problem and its context, describing how socio-environmental justice, equity, and safety differ between and within cultures, determining how integrating social-environmental justice, equity, and safety affects problem solving, defining, negotiating, and applying values, principles, and objectives while identifying multiple points of view with others) .

Theoretical background:

The value-focused thinking skills includes five main skills, namely:

- 1- Assessing the entire problem and its context.
- 2- Describing how justice, fairness, and socio-environmental integrity differ among cultures.
- 3- Determining how the integration of justice, equity, and socio-environmental integrity affects problem solving.
- 4- Defining, negotiating and applying values, principles and goals while identifying multiple points of view with others (Wiek et al, 2011:29).

The characteristics of Environmental Sustainability Values:

Environmental values have some characteristics, namely:

- 1- Environmental values and the so-called value position indicate that there are underlying motives behind the individual's judgments on environmental issues.
- 2- Arranging environmental values in a hierarchical organization and a value system, and arranging the most priority values at the top of the pyramid and the least important ones among the leaders of the pyramid.
- 3- Environmental values represent motives or drives that drive humans to interact with their environment (Mohammed, 2020: 21).

The way a person develops his values reflects how they react to and adapt to his social surroundings, but how they do so expresses a social idea that has to do with how they interact with other people. The behavior of the university student, for example, is affected by the behavior of the university professor and colleagues, which has an impact on his own personality. The individual's adaptation to his environment and the moral growth are complementary to each other in the process of socializing the individual, as the value development leads to the individual's adaptation to his social environment. Thus, his feeling of happiness through adherence to the laws and values of society and proper social interaction with others, which ultimately enables him to make decisions that bring him more happiness. (Salma, 2019: 21).

Psychologists acknowledge that moral and value-focused thinking skills are acquired skills acquired by the individual mostly as a result of his regular engagement with various life circumstances. The talent, however, is not learned all at once, according to psychologists, but rather it is acquired cumulatively or in parallel to develop all personal aspects of the individual. The person's value development is influenced by the qualitative shifts in his moral judgments that take place during this period of growth, enabling him to develop the values that help to fortify interpersonal bonds, improve self-adaptation, and act in accordance with his beliefs. This naturally helps the individual to preserve and sustain the environment. (Atiyah, 2010: 75)

The value-focused thinking skills of the individual also help to achieve better amount of psychological health, and to avoid psychological tensions and conflicts that lead to the development of a well-balanced, integrated personality as well as the discovery of a personality that is capable of taking charge and coming to decisions that are beneficial to both the individual and his or her community. Thus, the skills of value-focused thinking are a central and pivotal topic for students, as this will be reflected in students' ability to solve environmental problems within the university. This is due to the individual with his sense of his value, his dignity, his scientific personality and his importance in the society in which he learns, and the development of his abilities to achieve himself on correct and effective bases. As a result, a variety of techniques have been developed among university students with the goal

of assisting the student in reflecting on himself and expressing his hidden qualities and potential in order to get the most out of them. (Ahmed, 2018: 9)

It began to focus on the human aspects of the university student in his ability to deal with the environment properly. It also focuses on the religious, value and educational aspects derived from our faith and the Sunnah of the Holy Prophet, (PBUH), and from our customs and traditions. These aspects help the student think about noble morals and values before making any decision in any task, in a process, or in a specific job. (Musharraf, 2009: 65).

Environmental sustainability ultimately depends on the skills of value-focused thinking since it relies on the student's effort to gain knowledge of the different aspects of value. Scrutinizing value issues and profiting from the various viewpoints encompassing him is one of the factors that qualify him to make sound environmental decisions. The value-focused thinking skill is the cognitive and emotional element that mirrors what the student thinks is true or false by which he can take into account the interests of others. Building his personality helps him according to customs, traditions and values according to sound standards, (Al-Khilani, 2015: 48).

Research community

The research community included (210) undergraduates of the Department of Chemistry at Ibn Al-Haitham the 4th class (morning and evening studies). The percentage of students was (51%) for (108) male students, and (49%) for (102) female students, according to the data of the Department of Chemistry at the College of Education for Pure Sciences / Ibn Al-Haitham for the academic year (2022/2023 AD).

Research sample:

It was represented by selecting a sample of the 4th stage students in the Department of Chemistry - College of Education for Pure Sciences / Ibn Al-Haitham - University of Baghdad. It included (136) male and female undergraduates who were chosen randomly.

Research tool:

It consisted of preparing a test of value-focused thinking skills for the research sample. The objective of

the test was to detect the knowledge of the research sample of the four skills of value-focused thinking, namely: (assessing the entire problem and its context, describing how socio-environmental justice, equity, and safety differ between and within cultures, determining how integrating social-environmental justice, equity, and safety affects problem solving, defining, negotiating, and applying values, principles, and objectives while identifying multiple points of view with others). The validity of the virtual test has been verified by illustrating it to arbitrators specialized in chemistry, teaching methods, psychology, and measurement and evaluation.

Psychometric characteristics of the research tool:

The recognition of paragraphs was extracted using the following:

Correcting the value-focused thinking test forms for the statistical analysis sample. (2) Organizing the overall scores attained by the sample in descending order from the highest score to the lowest score in the test. (27%) of the completed (37) questionnaires were selected. The students obtained scores ranging (94-76), and (27%) of the questionnaires, which amounted to (37) questionnaires. They had scores ranging (34-40), since this percentage is the best compared between the two terminal groups in the response, which are the maximum possible size and discrimination (Abu Libdeh, 1979: 349).

When determining the discriminating power of the paragraphs, (27%) of the sample represents members of each of the two extreme categories (Al-Dulaimi, 2019: 77). This proportion indicates that there were (37) surveys in each category. The T-test for two independent samples was used to examine each test item. By comparing the computed t-value to the tabular t-value, which is equal to (1.980) at a significance level of (0.05) and a degree of freedom (72) the calculated t-value was taken into consideration as an indication of paragraph discrimination. The estimated t-values for each paragraph were deemed to be statistically significant when they exceeded the tabular t-value.

Test Validity:

Chi-square was adopted as a statistical method to verify the validity of the paragraph to ensure the face validity of the items of the value-focused thinking skills

test. It was submitted to a panel of arbitrators and experts in educational psychology, chemistry, and teaching strategies, to find out the validity of the items of the value-focused thinking test. It was found that the Chi-square value calculated for all paragraphs is more than the tabular value of (3.84) at the level of significance (0.05) with a degree of freedom (1).

Test stability:

Two methods have been adopted to calculate test stability: the internal consistency method using the Cronbach-Alpha. The value of stability for this method was (0.745), and the second method was the half-partition method, which had a stability value of (0.798).

Description of the test in its final form:

After performing the statistical analysis of the value-focused thinking skills test items, and extracting its psychometric characteristics represented by validity and reliability. The number of paragraphs in its final form (32) paragraphs. (8) skill paragraphs (problem assessment), (8) skill paragraphs (intercultural environment), (8) skill paragraphs (environmental problem-solving), and (8) skill paragraphs (identifying values, principles, and goals). For each question, three alternatives were given, with different degrees. The first alternative (a high score is given 3 marks). The second alternative (average score and two marks). The third alternative (few score and only one score given). In this way, the total score for each male and female student was calculated by collecting the scores of the test questions. Thus, the highest score obtained by the examinee is (96), the lowest score is (32), and the hypothetical mean for the test is (64) degrees.

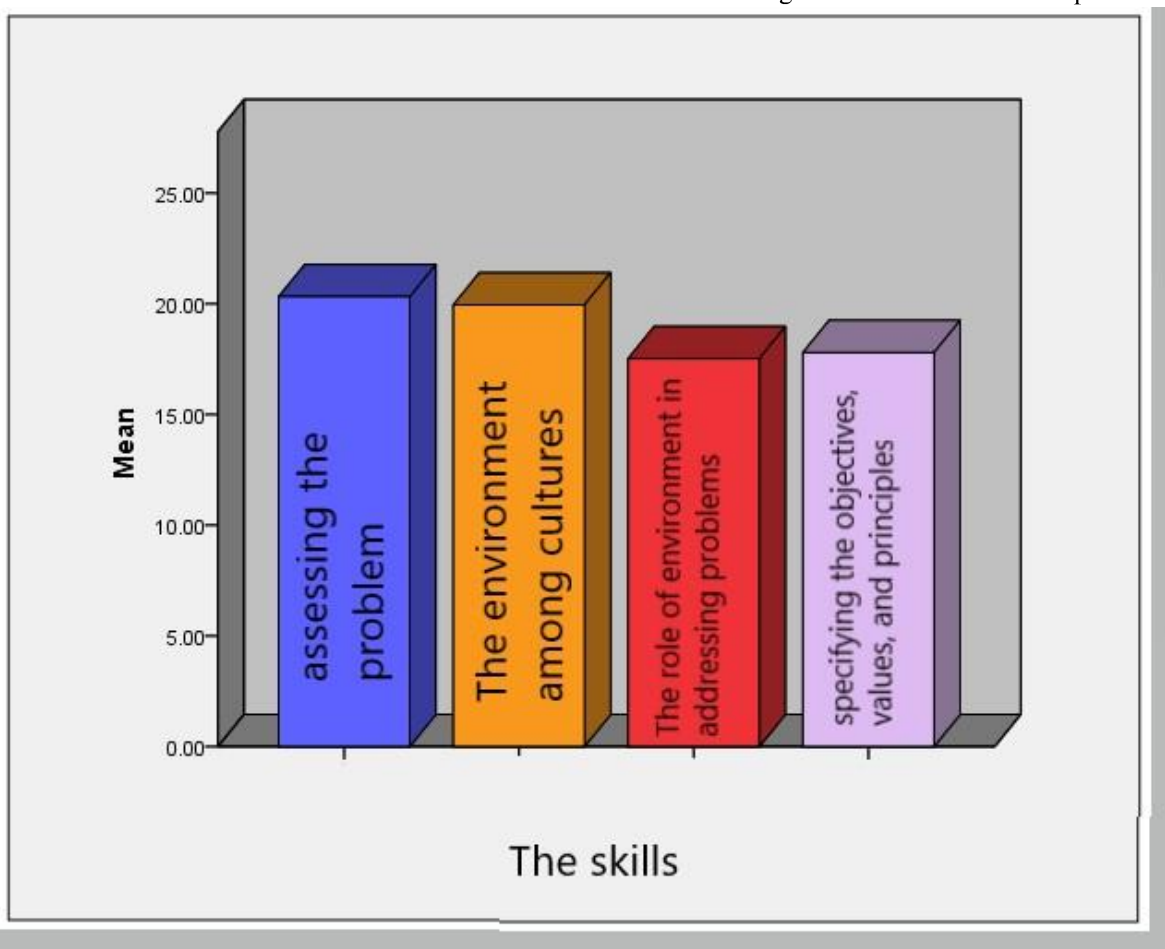
Presentation of the results

The purpose of this study is to determine the value-focused thinking abilities of the students at the Faculty of Education for Pure Sciences/Ibn Al-Haitham in Iraq. After calculating the scores attained by the undergraduates in the value-focused thinking skills test, the researcher relied on using the t-test for one sample. The calculated t-value was ((18.191), which is more than the tabular value of (1.960). It appeared that there was a significant difference at the level of significance

(0.05) and with a degree of freedom. (134) as illustrated in the table below.

Sample	T-value		Hypothetical mean	Standard deviation	Arithmetic mean	Level of sig.
	Tabular	Calculate d				
136	1.960	18.191	64	7.424	75.580	0.05

The result indicates that there are statistically significant differences at the level of significance (0.05) in the value-focused thinking skills of 4th stage students in the Chemistry Department - College of Education for Pure Sciences - Ibn Al-Haitham, in favor of the research sample. This means that the fourth stage students have value-focused thinking skills. The figure below shows the arithmetic averages of the value-focused thinking skills of the research sample.



By presenting the above results, it was found that there are statistically significant differences at the level of (0.05) among the fourth stage students in value-focused thinking skills, because the calculated t-value (18.191) is greater than the tabular value (1.960) in favor of the research sample (fourth stage students / department). Chemistry in the College of Education for Pure Sciences - Ibn Al-Haytham).

Discussion

The results revealed that the students of the 4th stage / Dept of Chemistry in the College of Education for

Pure Sciences - Ibn Al-Haitham have value-focused thinking skills. This is what the results indicated in the current research. This means that they have skills for focused thinking on value-focused thinking, as well as they have skills for thinking oriented on the concepts of justice, fairness, social safety and ethics, in addition to understanding the differences in concepts between and within cultures. This finding, according to the researcher, indicates that the value-focused thinking skills are impacted by and tailored to their social environment. The surrounding society's ethics and values have an impact on the student's personality since they shape his own ethics and values. In addition to

healthy family upbringings connected to the teachings of the real Islamic faith, it contained sound family values, principles, and customs in keeping with our religion and higher ideals. It also included the curricula that are prescribed for students that guide them towards dedication to noble values. Thus, the individual's adaptation to his environment and the moral growth are complementary to each other in the process of socializing the university student, as the value-focused thinking skills lead to the individual's adaptation to his social and environmental environment.

Conclusions

It was concluded that:

- a. The undergraduates of the 4th stage / Dept of Chemistry at the College of Education for Pure Sciences - Ibn Al-Haitham in the academic year (2022-2023), have the skills of value-focused thinking.
- b. The skill of evaluating the problem from the skills of value-focused thinking was the highest among undergraduates of the 4th stage / Dept of Chemistry in the Faculty of Education for Pure Sciences - Ibn Al-Haitham, followed by the environmental skill between cultures, then the skill of identifying values, principles and objectives, then the environmental skill in solving problems.

Recommendations and suggestions

- 1- Using the value-focused thinking skills of students at all educational levels in solving academic, life, and environmental problems.
- 2- Letting the curricula developers aware of the importance of value-focused thinking and the skills it contains, and including it in the curricula at the different levels of study.
- 3- Organizing seminars and conferences on a regular basis to familiarize students with the skills of value-focused thinking about ways to preserve the environment and its importance in human life.
- 4- Benefiting from the value-focused thinking skills test as a tool to reveal students' value-focused thinking.

In order to complete the research requirements, the researcher suggests:

- 1- Conducting similar studies on chemistry teachers in secondary schools to know the skills of value-focused thinking.
- 2- Conducting a research study dealing with the skills of value-focused thinking and its relationship to other variables such as environmental decision-making among undergraduates of the Department of Chemistry in Iraqi universities.
- 3- Building a training program to develop students' value-focused thinking skills.

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