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## The effectiveness of artificial intelligence applications in developing self-awareness skills among students of the basic stage

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### Abstract

The study aimed to investigate the effectiveness of artificial intelligence applications in developing the skills of self-awareness among students in the basic stage. To achieve the goal of the study, a descriptive approach that mixed both quantitative and qualitative methods was used. The study sample was selected intentionally and consisted of 60 students from the tenth grade of Ars School in Jerash Governorate for the second semester of the academic year 2023/2024. In this study, the researcher used a questionnaire as a data collection tool to measure the dimensions of the self-awareness variable through 10 paragraphs. After distributing the questionnaire electronically, 54 students responded, resulting in a 90% response rate. The results of the validity and stability tests showed that the study tool is highly stable, as the value of Cronbach's Alpha is 0.938, which reflects a high degree of stability and internal consistency. The results indicated that self-awareness was found to be high ( $M=3.534$ ;  $SD=1.956$ ). In light of the results of the study, a number of recommendations and proposals were made.

**Keywords:** Artificial intelligence, Self-awareness skills, Self-awareness, Students of the basic stage.

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### 1. Introduction

Artificial intelligence is a science that has developed and produced many programs and applications that perform tasks requiring human intelligence. People's lives have become more productive because of the various types of applications offered by artificial intelligence compared to how they used to be. The emergence of artificial intelligence has helped society today to understand themselves and their self-awareness in more positive ways, to diversify their strategies and methods of

solving problems, and to control their impulses through modern and updated applications on an ongoing basis, considering individual differences and the varying abilities of learners. With all this progress, it is necessary to pay attention to the psychological and social aspects because they are among the most important factors that contribute to improving the level of education and learning of students, enhancing their achievement, and developing their thinking patterns of all kinds. Psychological and social well-being are pivotal indicators in tracking the quality of an individual's academic achievement, and they allow for the development of both the individual and society, as well as the outlook for the future [1].

Conscious students have an awareness of themselves and of presenting their ideas objectively, as well as interpreting their feelings and actions. Unconscious students suffer from a loss of self-confidence and a weak ability to understand and perceive their ideas [2]. With the development of artificial intelligence applications, there is an increasing interest in developing life skills and mental flexibility by providing various resources to achieve educational goals in a simpler way, as noted by Elsayed Ahmed and Hasegawa [3]. This interest in educational institutions has pushed towards updating the structure of academic content and outputs so that they are compatible with the requirements of the times [4, 5].

Artificial intelligence varies according to the functions it performs into four different types that can be limited to the artificial intelligence of interactive machines, which is the simplest type of artificial intelligence because it lacks learning based on previous experiences, artificial intelligence with limited memory, and artificial intelligence based on the theory of mind, which can understand the machine's feelings and interact with people and communicate with them [6].

Artificial intelligence is moving towards developing self-awareness skills, a concept that refers to future expectations. In this context, self-awareness and problem-solving skills are very important, as they help individuals understand their strengths and weaknesses, enabling them to make informed decisions and face challenges efficiently (AlSalti et al. [7]). Therefore, the development of self-awareness skills based on artificial intelligence faces a set of challenges and is represented by taking good care of the use of artificial intelligence, the Internet of Things, and big data to create a sustainable and inclusive reality, ensuring that technical progress improves people's lives instead of just progress [8].

One of the most important challenges is the lack of interaction and participation, which requires teachers and designers to provide interactive, attractive, and interesting designs, as well as effective communication between teachers [9, 10].

One of the most important tools used by artificial intelligence applications is what was mentioned by Haeussler et al. [11]: video lectures, evaluation tools, personal tests, and interactive activities, as indicated by the study of Yu et al. [12]. The purpose of this use is to allow students to test their understanding of the content in an interactive and non-traditional way. In addition to posting advertisements and comments allowed by these means.

Psychosocial learning is one of the pillars of continuous learning to achieve the Sustainable Development Goals, specifically the fourth goal: quality education, according to the Sustainable Development Goals stipulated by the United Nations, which states "ensuring inclusive, equitable, and quality education" (Zajda [13]). This enhances opportunities for lifelong learning and psychosocial well-being, focusing on several skills: life skills, psychosocial learning, emotional intelligence, and investing strengths in personal development. These skills serve as a bridge to adapt to new changes and situations, enhancing a sense of security, tranquility, and stability, increasing motivation, and improving the chances of success [14].

Therefore, Tao, et al. [15] requires students to learn self-awareness skills to realize their emotions, so that the student becomes more aware of his feelings and behavior, not only through traditional means, but also by simulating virtual reality to develop an independent personality capable of taking responsibility, and to be able to choose appropriate methods and use multiple cognitive styles.

Artificial intelligence and psychosocial intelligence refer to different concepts, but the relationship between them can be found [16]. He stresses that psychological artificial intelligence is a modern field that combines artificial intelligence and psychology, while psychosocial intelligence is related to developing social and emotional skills, learning from others, and interacting effectively in social situations. Referring to the study of Abdulla Alabbasi, et al. [17], psychosocial learning can help students develop their social and emotional skills, improve their abilities to communicate and work together, interact with others, and enhance their social and cooperative skills, which can help them succeed in their future careers [18].

### *1.1. The Problem of the Study*

The problem of the study stems from the emergence of some emotional disorders in students, such as anxiety, stress, and depression, as well as the lack of awareness among students about themselves, their thoughts, and feelings. This negatively affects the construction of the student's scientific and human personality, leading to the accumulation of undesirable behaviors and low educational output. This situation provoked the researcher's thinking about the causes and how to address them, especially in light of the latest studies indicating an increasing deterioration of mental health in young people, which affects their social behavior both inside and outside educational institutions. This includes the study by Clarke et al. [19], as indicated by the studies of Solmi et al. [20], Samsu et al. [21], and Li et al. [22], which highlight the psychological and influential effects on mental health that hinder the development of self-awareness skills. The recommendations include increasing interest in psychological well-being and self-awareness skills as an integrated approach. Clarke et al. [19] also pointed to the effectiveness of school interventions aimed at promoting mental health and psychological well-being through psychosocial learning-based interventions. Additionally, the studies by Pikhart [23], Patrocinio [24], and Bani Ahmad [18] emphasize the

need to benefit from the applications of artificial intelligence in developing self-learning skills and self-awareness among students.

Therefore, the vision towards developing students' self-awareness skills is clear, as it is a purely scientific concept in light of the technological explosion and the urgent need to develop and digitally enhance self-awareness skills. Subsequently, the effectiveness of artificial intelligence applications will be investigated through students' responses according to their self-awareness skills. Objectives and Questions of the Study: The aim of this study is to focus on the theoretical framework and then apply it according to the following:

Determine the effectiveness of artificial intelligence applications in developing self-awareness skills. In order to serve the requirements of the times and suit the needs of students, their inclinations, desires, and skills, it is essential to monitor the degrees of their responses.

The study seeks to answer the following study question.

1. What is the level of response of students to self-awareness skills on the applications of artificial intelligence from their point of view?

### 1.2. The Importance of the Study

The importance of the study is represented in the promising active role of technology in this field through theoretical and applied aspects. At the theoretical level, the study seeks to enrich the Arabic Library by keeping pace with the knowledge and technical development in the twenty-first century, which enhances the experiences of learners and builds essential skills such as self-learning. On the practical level, the study aims to provide students with unique learning methods outside the classroom, which helps them transition from the stage of acquiring knowledge to the stage of employing it within the skills of self-awareness, applying and measuring it, which leads to its development, managing feelings, and a sense of social responsibility. Self-awareness is a key element in this process, enabling students to evaluate their educational experience and make a positive impact in their communities.

## 2. Methodology of the Study

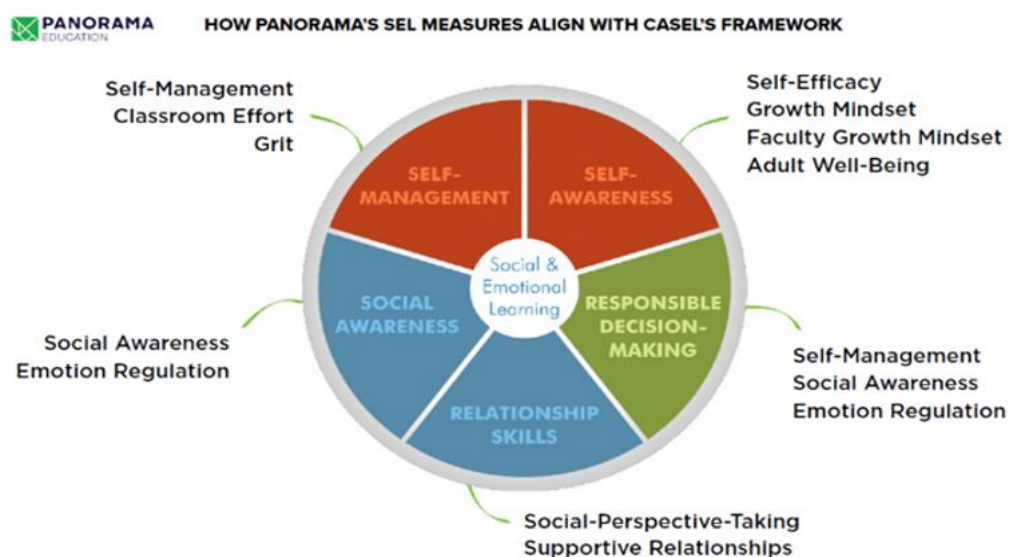
The study aimed to measure the effectiveness of artificial intelligence applications in developing self-awareness skills among students in the basic stage; therefore, the descriptive approach was adopted.

### 2.1. Study Sample

The study sample was randomly selected and consisted of 50 students from the tenth grade of Sakib Secondary School for Boys and Sakib Secondary School for Girls.

### 2.2. Study Tools

To achieve the objectives of the study, a self-awareness skills development scale was prepared, and the electronic scale was integrated for the study sample to identify their strengths and weaknesses, through which training and educational needs were identified to enhance these skills. In this study, the researcher adopted the scale from Casel [25] and Karina et al. [26] as follows.



**Figure 1.**  
Alignment between the "CASEL FIVE" competencies and topics from Panorama's SEL assessments.

Figure 1: The CASEL and Panorama Scale, 2022, which consists of the five core competencies of the SEL Psychosocial Learning Skills.

The adoption of the CASEL and Panorama scales is essential for measuring and developing psychosocial learning skills, especially the skill of self-awareness. CASEL provides a framework for core competencies, while Panorama contributes to the collection of accurate data to measure the growth in these skills, which enhances the ability of individuals to understand their feelings and self-esteem, and positively affects mental health and educational sustainability [24, 25].

### 2.3. The Validity and Stability of the Study Tool

#### 2.3.1. Study Tool Sincerity

To ensure the apparent validity, the questionnaire was presented to a group of arbitrators to reveal the extent of harmony and belonging to the paragraphs with the field, as well as to verify that they were drafted correctly, with high accuracy, and grammatical precision.

#### 2.3.2. Reliability of the Questionnaire

The results of the analysis (Table 1) revealed that the questionnaire has a very high degree of stability, with a value of Cronbach and Furby [27] Cronbach's alpha coefficient (0.938), which is higher than the minimum acceptable value for scientific research purposes (0.70) according to Cronbach and Furby [27] and Nunnaly [28], and higher than the threshold value (0.80). Based on this, we conclude that the current study's questionnaire is characterized by high stability and strong internal coherence between its paragraphs.

**Table 1.**

Statistics of the stability of the study tool according to Cronbach's Alpha Coefficient.

|       |   |
|-------|---|
| 10    | Number of paragraphs (Questionnaire sentences entered in the analysis)            |
| 60    | Total number of sample members (sample size)                                      |
| 54    | Number of complete questionnaires in the examination.                             |
| 90%   | Percentage of completed questionnaires out of the total number of sample members. |
| 0.938 | Cronbach's alpha coefficient  |

The results in Table 1 showed that deleting any paragraph of the questionnaire will not increase the value of stability achieved, which indicates that all paragraphs can be retained without significantly affecting the degree of stability of the questionnaire or its internal coherence.

**Table 2.**

Statistics of the stability of the study tool Statistics of the stability of the study tool.

| Item   | Cronbach's $\alpha$ | Median | Standard deviation |
|--|---------------------|--------|--------------------|
| I can clearly express my feelings and sensations.  | 0.936               | 685    | 1.163              |
| I respect the opinions of others, even when I disagree with them.                        | 0.936               | 3.556  | 0.076              |
| I can defend myself without detracting from others.                                      | 0.936               | 407    | 1.158              |
| I am confident in my ability to complete all required assignments in different subjects. | 0.936               | 4.148  | 1.123              |
| I am confident in my ability to understand complex ideas in various subjects.            | 0.936               | 093    | 1.086              |
| I have confidence in my ability to learn all the subjects presented in the class.        | 0.936               | 4.333  | 952                |
| I am confident that I will remember what I learned in this class over the next year.     | 0.936               | 3.222  | 1 313              |
| I can accomplish the most difficult study tasks that are assigned to me.                 | 0.936               | 3.704  | 1.160              |
| I can easily control my emotions even when feeling stressed.                             | 0.937               | 3.130  | 1.401              |
| I can often pull myself out of a bad mood when I go through it.                          | 0.937               | 3.315  | 1.315              |

### 3. Show Results

Findings related to the study question, which states, "What is the level of response of students to self-awareness skills on the applications of artificial intelligence from their point of view?"

Table 3 shows the meaning, standard deviation, levels, and ranks of the responses of the study sample to the self-awareness dimension. It is noted that the arithmetic mean of the responses of the sample members regarding emotional regulation is 3.358, which indicates that there is a general average in self-awareness among the sample members. Self-awareness is not a skill that students automatically acquire but requires continuous training and awareness programs, which may not be sufficient in many educational environments, limiting their awareness of the importance and uses of this skill. Self-awareness is not a skill that students acquire automatically but requires continuous training and awareness programs, which may not be sufficient in many educational environments, limiting their awareness of the importance of this skill and its uses.

**Table 3.**

Arithmetic means, standard deviations, levels, and ranks of the responses of the study sample to self-awareness paragraphs.

| No   | Item   | median | Standard deviation | Level  | Rank |
|--|--|--------|--------------------|--------|------|
| 1  | I can clearly express my feelings and sensations.  | 2.685  | 1.163              | Medium | 2    |
| 2  | I respect the opinions of others, even when I disagree with them.                        | 3.556  | 1.076              | Medium | 4    |
| 3  | I can defend myself without detracting from others.                                      | 3.407  | 1.158              | High   | 6    |
| 4  | I am confident in my ability to complete all required assignments in different subjects. | 4.148  | 1.123              | High   | 5    |
| 5  | I am confident in my ability to understand complex ideas in various subjects.            | 4.093  | 1.086              | Medium | 3    |
| 6  | I have confidence in my ability to learn all the subjects presented in the class.        | 4.333  | 0.952              | Medium | 1    |
| 7  | I am confident that I will remember what I learned in this class over the next year.     | 3.222  | 1.313              | Medium | 8    |
| 8  | I am able to accomplish the most difficult study tasks that are assigned to me.          | 3.704  | 1.160              | Medium | 7    |
| 9  | I can easily control my emotions even when feeling stressed.                             | 3.130  | 1.401              | Medium | 10   |
| 10   | I can often pull myself out of a bad mood when I go through it.                          | 3.315  | 1.315              | Medium | 9    |
| Arithmetic mean and general standard deviation of the self-awareness variable. |  | 3.358  | 2.685              |        |      |

Responses in this variable range from medium to high, showing a diversity in the level of students' ability to control and deal with their emotions. It is also noted that paragraph No. 6 ranks first in the table, indicating that the students are most able to stay calm even in cases of adverse situations. While paragraph No. 2 ranks highest in the table, this indicates the ability of students to get out of a bad mood easily, and the general standard deviation of this variable is 1.28, which indicates a wide variation in the level of students' ability to regulate their emotions. These analyses are also based on the data presented in the table and provide a better understanding of students' ability to acquire and develop self-awareness skills based on AI applications. This knowledge can be used to develop strategies and training that enhance students' ability to control their emotions and improve their ability to deal with them properly and effectively.

The results in Table 3 illustrate the importance of developing self-awareness skills for the study sample. It is advisable to provide support and guidance to individuals to enhance their ability to control and deal with their emotions in a healthy way. This can be achieved by providing a supportive environment and providing the necessary training and resources, teaching the techniques used to manage stress and improving the ability to control impulses. All of this is aimed at promoting mental health and the emotional balance of individuals. Therefore, it should be noted that if the curriculum lacks clarity on the relationship between self-awareness and the use of AI applications, students may have difficulty linking this concept to their practical experiences in smart applications.

The arithmetic mean of this dimension is 3.358, and the standard deviation is 2.685. The relative mean of this dimension indicates that there is an average level of self-awareness among the participants. This refers to their ability to control and regulate their emotions in a healthy and effective way, adapting to emotional challenges and psychological pressures.

Overall, the table shows students' appreciation of self-awareness skills and factors associated with learning and positive relationships in the learning environment. The overall arithmetic mean of the overall dimensions indicates that there is a moderate to high level of these skills and factors among the participants. However, individual variations and cultural and pedagogical factors that may influence these outcomes must be considered.

The trend towards enhancing the developmental mindset and self-efficacy: The developmental mindset and self-management show intermediate levels, which means that they can be strengthened to develop the learning skills and personal growth of students. This can be achieved by encouraging students to continue to improve and self-develop, enhancing their abilities to manage time, accept others, and be open to cultures and ideas. Although self-awareness appears average, it is still an important aspect to promote student development. Self-awareness skills can be enhanced by providing strategies and tools to control emotions and deal with emotional challenges properly and effectively, such as anger management and emotion management.

Based on these findings, it is clear to us that future researchers are conducting further training and development in the areas of self-awareness. This information can also be used to guide training and education and improve the overall performance of students. In addition to providing training and educational programs that focus on communication skills and empathy with others, it is important to encourage discussion, group dialogue, and cooperative activities that help students exchange views and foster mutual respect. Promoting activities that help students express their feelings correctly and effectively, as well as developing conflict resolution skills in peaceful and constructive ways, is essential.

The arithmetic means and the total standard deviation of self-awareness skills indicate that students in the sample have an average level. However, it is necessary to develop these skills, and to improve them among students, strategies can be implemented to develop specialized training programs, adopt a project-based learning approach, promote a culture of continuous learning, transfer learning to others, and periodically evaluate and review the results.

#### 4. Discussion of Findings and Recommendations

Findings related to the study question, which states, "What is the level of response of students to self-awareness skills on the applications of artificial intelligence from their point of view?"

The researcher draws some important recommendations and conclusions related to self-awareness because the total arithmetic average reached (3.358). Thus, these skills should be learned and improved through practice and regular training in emotional regulation skills that help students control their emotions and stay calm in different situations. It is essential to provide psychological and social support to them by the school in a supportive environment that encourages empathy and social participation. Self-awareness helps students understand what they want from their desires, needs, strengths, and weaknesses in their behavior, as well as identify their behaviors that need to be modified to overcome the problems they face in their lives. The lack of awareness of the student of themselves may lead to confusion in self-understanding, low self-confidence, and an inability to perform well academically. Students' ability to adapt to the circumstances of their daily lives depends heavily on their self-awareness of their feelings and behaviors. Self-awareness enables them to recognize their feelings and understand their causes, which helps them choose appropriate methods to deal with the different situations they face in their school or home environment [29]. By enhancing this skill, the student becomes better able to manage his emotions and regulate his actions, which contributes to developing his academic and social abilities and achieving his goals despite the changes he may face at this important age.

The researcher is advised to increase awareness and develop enrichment sessions, interactive activities or individual meetings about the importance of self-awareness and its benefits, by providing educational programs and workshops to explain the concept of self-awareness and to clarify specific strategies to promote self-awareness, such as practicing positive meditation or using some applications that help in meditation or calming, in addition to developing stress management skills and teaching students effective communication techniques and non-violent communication, and promoting the concept of inner peace and empathy. It is also possible to cooperate with the Department of Sports and Arts to encourage participation in recreational and motivational activities such as sports and drawing to relieve stress and improve emotional balance, and this is emphasized [30] in dealing with others within the surrounding environment and carrying out various activities that enhance the skill of social awareness and emotional stability. Work with students individually and as needed through relaxation training and stress management techniques such as deep breathing and meditation. These techniques can help calm emotions and improve the ability to control them, especially for gifted students [2]. In summary, social awareness of its components is an important skill to cope with life challenges and improve mental and emotional health, as this skill helps to promote personal well-being and healthy social relations, so it is recommended to provide support and guidance to students in developing and enhancing this skill to achieve a more balanced and happy life.

In general, it can be said that students show a positive response to self-awareness skills, especially in aspects of confidence and effort in the classroom. However, there are challenges in expressing emotions, requiring greater attention in order to enhance this skill. AI applications can play a role in supporting students in developing self-awareness skills through targeted activities and applications to improve these aspects.

##### 4.1. Recommendations

Considering the results, some recommendations can be made to improve psychological learning skills.

- Design interactive lessons and learning materials that enhance self-awareness skills, such as videos, educational games, and self-tests. These contents can include exercises that help students recognize their feelings and analyze their actions.
- Organizing workshops via the digital platform that focus on developing self-awareness skills, such as effective communication skills, impulse management, and critical thinking. These workshops can include practical exercises and group activities.
- Integrate digital learning with traditional education to enhance the learning experience. Practical activities in the classroom can help enhance the skills acquired through the digital platform.

##### 4.2. Propositions

- Provide online discussion platforms where students can share their experiences and discuss topics related to self-awareness and psychological learning skills.
- Organizing group projects via the platform to promote teamwork and cooperation among students, which helps them develop social and psychological skills.

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