The Effect of the Adaptive Support Pattern (Brief/Detailed) in Developing Academic Perseverance Skills and Reducing Mind Wandering among Instructional Technology Students

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Research Abstract:

The research aimed to develop academic perseverance skills and reducing the level of research among educational technology students through building a learning environment according to the two types of adaptive support (brief and detailed), and to verify the evidence of the adaptive support pattern (brief/detailed) in. The research innovations consisted of (40) students from First year students - Department of Educational Technology - Faculty of Specificity - Aswan University. The students were divided into two groups equally in the learning environment (the first group used the brief trivial adaptive support style, and the second group used the detailed diagnostic adaptive style). The results indicated that there was a difference. Statistically significant at the level of $\geq (0.05)$ between the means of students from the two experimental groups in the pre- and post-applications for measuring academic perseverance and measuring mental wandering for percussive communication, due to the second effect of the difference in adaptive support (brief) versus (detailed); The results indicated that there is no statistically significant difference at the level of $\geq (0.05)$ between the averages of the students of two experimental groups in the measure of academic perseverance. They indicate the primary effect of the difference in the style of adaptive support (brief) versus (detailed). The results also indicated that there is a statistically significant difference. At level $\geq (0.05)$ between average star students from two experimental seats in the wandering scale of the mental complex that is right using the joint adaptive support pattern.

key words: Brief support, detailed support, academic perseverance, Mind wandering .

Introduction:

Instructional technology is concerned with research in the field of developing electronic learning environments in a way that suits the needs and characteristics of learners and their learning style, in order to clarify the differences between learners during their learning process, and to use the necessary means and tools necessary for the educational method, taking into account the involvement of so-called methods of supporting learners from progress. Towards learning topics and proceeding with them as one of the means of assistance until the number of them decreases, that is, effectiveness through the ability to master various skills resulting from the rejection of little Mind wandering and the level of academic perseverance.

Define the research problem:

The problem of the current research was an attempt to develop academic perseverance skills and reducing Mind wandering among educational technology students through determining the effect of the adaptive support pattern (brief versus detailed) in this problem, the research attempts to answer the Next main question:

How can a learning environment based on adaptive support (brief vs. detailed) be designed to develop academic persistence skills and reduce distraction among educational technology students?

The problem of the current research was an attempt to determine the effect of the adaptive support pattern (brief versus detailed) in developing academic perseverance skills and reducing Mind wandering among educational technology students. To address this problem, the research attempts to answer **the Next main question**:

What is the effect of the adaptive support style (brief versus detailed) in developing academic persistence skills and reducing Mind wandering among educational technology students?

The following sub-questions branch out from this question:

1. What is the proposed instructional design model for building an adaptive support environment (brief versus detailed)?

2. What is the effect of the brief adaptive support pattern on developing academic perseverance skills among educational technology students?

3. What is the effect of the detailed adaptive support pattern in reducing Mind wandering among educational technology students?

4. What is the effect of the different style of adaptive support (brief versus detailed) in developing academic perseverance skills and reducing Mind wandering (cognitive aspect) among educational technology students?

The current research aims to reach:

1. Revealing the criteria for designing the support pattern (brief versus detailed) within the mobile adaptive learning environment.

2. Discovering the most appropriate type of adaptive support (brief versus detailed) and its impact on developing academic perseverance skills and reducing Mind wandering among educational technology students.

3. Directing the attention of specialists to the importance of adaptive support.

Search limits:

- **Objective limits:** Microteaching course using educational technology - first year - Department of Educational Technology.

- **Sample limits:** 40 male and female students from the first year - Department of instructional Technology - Faculty of Specific Education - Aswan University.

- **Spatial boundaries:** Faculty of Specific Education - Department of instructional Technology - Aswan University .

Research Methodology:

The researcher relied on the quasi-experiments method. To study the effect of the adaptive support pattern (brief versus detailed) in developing academic perseverance and reducing mind wandering. The descriptive approach was also relied upon to study the cognitive frameworks of the independent and dependent research variables.

ExperiMind research design:

In light of the research methodology and its variables, the research groups consisted of two experiMind groups: This is to apply research tools to them beforehand. This is to ensure the homogeneity of the students, then conduct an experiMind treatment and compare their scores in the post-application to determine the significance of the differences resulting from the treatment, and the extent of the impact of the adaptive support style (brief versus detailed) in developing academic perseverance skills and reducing mind wandering among educational technology students, as in the following table.

Applying pre-measurement tools	ExperiMind treatment material	Application of dimensional measurement tools
Pre-achievement test	A learning environment with modular adaptive support (brief-detailed)	Post achievement test
Pretest academic perseverance scale		Posttest academic perseverance scale
Tribal Mind wandering scale		Dimensional Mind wandering scale

search tools:

1 - Academic Perseverance Scale.

2 - Mind wandering scale.

Theoretical framework:

Level of adaptive support: brief versus detailed:

There are several levels of support in adaptive support environments, the most important of which is brief and detailed support, which are the two types used in the current research. Brief support is known as it is the minimum amount of assistance given to the learner while he is moving in the adaptive learning environment (Tamer Samir, Reham Fouad, 2020), and what is meant by support Detailed is the maximum assistance given to the learner in detail as he or she moves through the adaptive learning environment.

Helmy Abu Mota, 2013, referred to the types of support according to their level and summarized them as follows:

• Level 1: Brief support, which is the minimum support that should be available in any educational environment.

• The second level: Intermediate support, which is located inside each unit. There is also a key to support the learner at the bottom of each screen and to help the learner navigate the virtual learning environments.

• The third level: Detailed support, which is hints that appear when the mouse cursor is placed on any of the screen keys.

(Shaima Youssef; Tariq Abdel Salam, 2009) point out that brief support is the minimum amount of help that must be available in any multimedia program and cannot be dispensed with in any way, while detailed support includes hints for each of the help buttons, which are: There are hints that appear when you place the mouse cursor on any of the buttons at the bottom of the program screen, and directions where each button when pressed gives a set of different assistance, (hattie.timperley,2007.bromberger,et all,2011,smits et all 2008.183) mentioned several characteristics of detailed support, including:

- Information is provided after the learner made an error, with the aim of helping him improve his performance and correct his response

- The learner is informed of the entire model of alternative behavior and all its details and parts, especially providing explanations, explanations and proofs about this or that procedure or this or that process.

This type of support performs a therapeutic function to treat wrong responses, and if it is regular and integrated with the learner's experience, it is formed to avoid making the mistake or falling into it again.

- Detailed support is criticized for requiring longer time on the part of the instructional designer in preparing it and taking up more time than the learner's learning time. Likewise, increasing details in conveying information restricts the learner to the information he receives (Miller & Jaehnig. 2007).

Regarding the studies that dealt with support, we mention that the study (J.D., Simons, K.D., Klein, 2007) aimed to measure the effect of the content support pattern on the final project performance, achievement, and trends in the problem-based learning environment. The content support pattern included both conceptual support and... and the strategic support included in the system. The results showed that the group that received support performed better in two of the four parts of the final project than the groups that did not receive support. Despite this, the support did not result in differences in the learners' performance in the achievement test, and that The support did not have an impact on the learners' attitudes, and they did not see the importance of this support. Rather, they viewed it as something additional rather than something useful.

As for the study (Shahinaz Mahmoud, 2009), it aimed to measure the effectiveness of employing electronic support with computer-based learning software in developing the electronic writing skills

of female English language teachers. The results showed the potential of procedural and informational support in providing a better learning environment that enabled female students to master electronic writing skills. .

The study (Katherine L. McNeill, David J. Lizotte. 2009) addressed the effect of gradually introducing or deleting electronic support in providing learners with educational support to interpret and construct scientific facts, and its results demonstrated the presence of important learning outcomes for learners in all components of scientific interpretation as a result of providing or deleting support. gradually.

While the study (Dabbagh, N., Kitsantas, A., 2005) aimed to measure the effect of using web-based educational communication tools as educational aids that support the learning process according to the "Self-Regulated Learning SRL" format and according to the nature of its components, which are (setting goals and monitoring). , and self-monitoring), and the results showed that web-based tools (communication and engagement tools, content development tools, availability and presentation tools) as educational aids were more influential in developing the SRL stages for learners and were also necessary in supporting specific types of learning tasks.

The 2004 study (Zydney, J.M.) also aimed to measure the effect of different types of support on learners' access to a solution to their problems, and provided a set of forms of support that disappear as learners progress in the program. This support includes time management to help learners distribute their time, and cognitive processes that help learners to Collecting, organizing and integrating their knowledge, as well as supportive guidance providing training, and the results showed that the support helped the learners reach the problem and suggest solutions to it.

As for the study (Henning, J. E.., 2004), it aimed to measure the effect of metacognitive support on learners' performance in solving

problems and trends in a multimedia database. The results of the study resulted in differences in learners' performance.

When we talk about academic perseverance, it can be said that it expresses the extent to which the student continues to work, exerts the utmost effort, and overcomes academic difficulties in order to achieve academic levels and achieve standards of academic success. It has also been translated by the foreign term "Delay of Academic Gratification" to the extent of the student's continuity and persistence in studying and academic activity, and therefore It was called academic perseverance, and it was defined as "students' attempts to delay the satisfaction of small, immediate goals in order to achieve academic goals that are more desirable to them but relatively distant." Therefore, the student's awareness of the development of the educational process and the quality of education helps in raising the level of academic perseverance to achieve valuable goals. Higher than current goals, and the committed style, as one of the identity styles, in which its owner commits to deep contemplation of information and discussion of it, contributes to abandoning goals that have immediate rewards for achieving academic tasks required of him, and it also helps to raise the level of academic achievement, as a correlation was found between the ability to postpone gratification Academics and academic achievement (Farouk Musa, 2009; Khaled Abdul Rahman, 2014; Abdul Qawi Al-Zubaidi, Ali Kazem, and Basma Al-Balushi, 2015, 353; Amani Abdel Tawab Saleh, 2018).

Perseverance is also one of the important characteristics that a successful person must have. There is no success without effort, and perseverance is the backbone on which all mnemonic skills depend. There is no use for time management schedules without perseverance (Reham Al-Ghandour, 2013).

As (Najla Fares, 2018) defined academic perseverance as: the learner's attempt to delay the satisfaction of small, immediate goals

in order to achieve academic goals that are desirable to them but relatively distant.

While (Amani Abdel Tawab, 2018) defined academic perseverance as an element indicative of an individual's experiences when facing adversity and adversity, as he can overcome them and reach a state of psychological balance that he was in before going through the adversity and before being exposed to stressful events. Academic perseverance is linked to the individual's upbringing, culture, and nature of his personality. Or the biological structure, and these psychological and social mechanisms increase the psychological toughness of the individual and help him withstand the adversity that he goes through in his life in general and in his academic life in particular.

Johnson (2017) also defined academic perseverance as: the learner's ability to complete the course study despite the difficulties and variables that prevent persistence in success, and weak perseverance may lead to a decreased ability to process information.

Theories explaining academic persistence:

(Sahar Al-Qatawi & Najwa Ali, 2016) referred to Axon's theory, which explains the level of academic perseverance among learners through the following motives:

• Regarding the academic work to be completed: it must be compatible with the abilities of the learners in the classroom environment in general, and there must be previous success experiences in completing this academic work.

• As for the learner himself: Learners are divided into two types in terms of their motivation towards academic work and the extent of their academic perseverance:

- Learners characterized by a high need for academic achievement and a greater degree of fear of failure.

- Learners whose fear of failure is greater than their need for academic achievement.

Mind wandering is also a general human phenomenon that occupies a portion of our daily thinking time and affects performance and life and human tasks. This phenomenon occurs when the mind drifts or turns away from the task and focuses on internal thoughts and Mind images that are not related to the task or the current targeted situation. Engagement and drifting in paths Ideas that are not relevant or useful to the target task are a common phenomenon in everyday life ((mittner, Hawkins, Boekal & Forstmann, 2016.33) Mind wandering is also one of the modern terms in the field of education and psychology, and it is one of the factors influencing the variables of the teaching and learning processes. This phenomenon is a Mind activity that occurs frequently to individuals, whether the matter is related to learning or has nothing to do with learning or has nothing to do with learning, except that The occurrence of this Mind activity weakens the learner's ability to concentrate and think effectively about a specific topic or problem (Ihab Al-Maraghi, 2020, 51).

The concept of Mind wandering:

Mind wandering is the cessation or interruption of focus on a task by non-task-related thinking. It means the failure to maintain focus on thoughts as activities related to the primary task as a result of an automatic shift of attention from the primary task to internally generated thoughts.

It is also defined as a failure in an individual's ability to maintain focus on his own thoughts and activities related to the current task, and this failure is due to a number of external and internal stimuli that interfere to draw attention away from the task (Randall. 2019. p55).

It is also known as another form of distraction, which can be influenced by cognitive traits (a tendency towards cognitive failure or alert attention) or states such as feeling tired or stressed (Burdett et al, 2016.53).

(Helmi Al-Fail, 2018) defined it as an automatic shift in attention from the primary task to other internal or external thoughts, and these thoughts may be related to the primary task but not related to it.

Types of Mind wandering:

There are two types of Mind wandering:

- Mind wandering related to the academic subject: It is a forced interruption of attention to thoughts that are not related to the current task but are related to the topics of the academic subject that occur automatically.

- Mind wandering that is not related to the academic subject: It is a forced interruption of attention to thoughts that are not related to the current task, nor are they related to the topics of the academic subject that occur automatically (Khalaf Allah Muhammad, 2020, 233).

Referring to the literature on mind wandering related to cognitive tasks, two types of self-generated thoughts that constitute the content of mind wander can be distinguished:

- Intentional wandering - Mind Deliberate: This refers to the individual's voluntary and conscious shift of attention to thoughts outside the scope of the task he is performing. This includes the individual's control over information processing, his awareness, and his desire to initiate thoughts, and thus does not result in the individual's awareness Because he experiences any feeling of surprise, anger, or loss of control.

- Spontaneous (unintentional) wandering-mind wandering: It refers to the individual's involuntary, unconscious, and unconscious shift of attention to ideas outside the scope of the task he is performing. This includes a lower degree of the individual's control over information processing, awareness, and the desire to initiate thoughts, as It refers to momentary lapses of attention during which the individual loses his or her metacognitive awareness of the

beginning of the episode of Mind wandering. Once the individual realizes that the wandering has occurred, he may feel surprised, angry, or lose control (Risko, Seli. al et, 2016, 606).

Reasons for Mind wandering:

The study of (Hilmi Al-Fil, 2018, Aisha Al-Omari, 2019, Ihab Al-Maraghi, 2020, Khalafallah Muhammad, 2020) indicated the causes of Mind wandering in the following points:

• Limited Mind capacity: This is due to decreased executive functions of memory and decreased task demands.

• Tasks that require constant attention, and this creates Mind pressure, leading to the emergence of mechanisms that push the mind to escape from those pressures, and distraction of thinking occurs to avoid the pressure.

• Mood: A negative mood leads to greater Mind wandering than a positive mood while thinking about a task.

• Negative thinking about the future: This happens through negative thinking about the future challenges that the student faces and his preoccupation with his ambitions, which increases Mind wandering.

• Negative predictions: such as drowsiness, fatigue, mandatory activities, and class assignments show Mind wandering and completely divert their thoughts to other thoughts outside the task.

• Positive predictions: such as happiness, efficiency, focus, enjoyment of things, students' thinking about the main task assigned to them, and increasing their motivation and desire to accomplish the task.

• Deep predictions: such as difficult, important activities that require thinking and planning, that require making decisions and challenging the students themselves and their abilities to carry out those tasks and activities.

Based on importance of Mind wandering among university students, many foreign and Arab studies have addressed it, including:

The study (Acai, A, 2016) examined the impact of three teaching methods, namely traditional lectures, case-based learning, and group discussions, on the degree of Mind wandering compared to traditional lectures. The study concluded that the teaching method has an impact on the degree of Mind wandering among learners. The LUO study also revealed ETAL, 2016 on the validity of the Mind Wandering Questionnaire, identifying the relationship between Mind wandering and life satisfaction, as well as identifying the relationship between self-esteem and Mind wandering. This study was applied to a sample of (1331) middle school students in China with an average chronological age of (79, 15) years and with a chronological age range of (12-18) years. The results of the study revealed that the Mind wandering questionnaire is an appropriate tool for measuring Mind wandering, and there is a negative relationship between Mind wandering and satisfaction with life when the self-esteem variable is mediated. A negative relationship was also found between self-esteem and wandering. .

The study (H, Rahal, E, Lindasay, & K, Brown, J, Creswell, 2017) also dealt with identifying the effect of training on Mind alertness in reducing Mind wandering among university students. This study was applied to a sample of (147) male and female students from University students (74 males and 73 females) were divided into three groups. Different training was provided to the three groups on Mind alertness, relaxation, and accepting the task. The results of this study revealed a statistically significant effect of training on Mind alertness in reducing Mind wandering among students. the university.

Search procedures:

Firstly, the method used in the research:

This research belongs to the category of quasi-experiMind research that targets the effect of independent variables on other dependent variables, and the quasi-experiMind method is considered the most

appropriate research method to achieve this purpose (Jaber Abdel Hamid, Ahmed Kazem, 1921, 1989).

Secondly, procedures for developing research tools, treatments, and exploratory experimentation:

The researcher reviewed a group of educational design models for learning environments, which can be used when preparing the two types of adaptive support (brief/detailed). Among these models are: Muhammad Attia Khamis (2009); Mohamed El-Desouki (2012); Abdel Latif El-Gazzar (2013); Nabil Azmy (2016). The researcher concluded that the general model of educational design is the most appropriate for designing and producing the research experience due to its flexibility of use.

- Analysis stage:

The analysis phase included the following sub-steps:

1- Identifying the problem and assessing needs:

The main research problem was weak academic perseverance skills and a high rate of Mind wandering among first-year students - Faculty of Specific Education - Department of Educational Technology - Aswan University.

2- Determine general aims:

The general objectives of the current research were to develop academic perseverance skills and reduce Mind wandering among first-year students - Department of Educational Technology (research sample)

P - Formulating the questionnaire's vocabulary:

The researcher reviewed educational literature and previous studies and research on the vocabulary structure of the Academic Perseverance Scale and the vocabulary of the Mind Wandering Scale.

Scale technicians :

The scale of academic perseverance and Mind wandering was presented in its initial form to a group of specialized arbitrators and experts in the field of educational technology, with the aim of

surveying their opinions and getting to know their suggestions regarding the extent of scientific accuracy of each word and the extent of the soundness and clarity of the linguistic formulation.

3 -Analysis of the characteristics of the students in the research sample:

This process aims to identify the most important common characteristics among members of the target group, which was represented by the students of the first year - Department of Educational Technology - Faculty of Specific Education - Aswan University, whose ages range between (19-20) years. Therefore, the distinctive characteristics of this age group were taken into account. Among them are the characteristics of physical, Mind, emotional, and social development at the university stage, including the good ability to deal with sources of information and learn new skills, the ability to interact and participate positively and solve problems, inference, conclusion, making judgments, and making decisions.

4- Learning environment:

The learning environment, which is the laboratory of the Department of Instruction Technology at the Faculty of Specific Education, Aswan University, was analyzed in terms of resources and available educational sources. It is an efficient laboratory that allows application to the research sample and achieves the desired goals.

5 - Analysis of learning resources and sources:

It consisted of ensuring the following:

At this stage, the content learning resources that students will be able to interact with will be identified in order to achieve the set behavioral goals.

Identify digital learning resources that will be developed in a completely new way:

These resources are the digital media that will be developed for the adaptive learning environment.

☐ Digital elements required to display the content of the adaptive learning environment:

These elements are represented by pictures, drawings, and illustrations to help students perform technology empowerment skills (some Google educational applications), which will be designed to help perform various learning tasks.

☐ Digital elements required to display reference materials for the learning environment, which are:

- Learning tasks: include instructions for using the learning environment.

- Learner's Guide to Using the Learning Environment: It includes clarifications regarding the components and screens of the learning environment, their functions, and how to deal with each of them.

- Learning environment navigation map: It explains the structure of the adaptive learning environment and the relationships between its components and elements.

Identify digital learning resources that will be reused:

These sources include a group of ready-made digital media available on the Internet that will be used for the benefit of the learning environment for the current research, which must be characterized by reliability, quality, modernity, and a close relationship to the content of the learning environment, which contribute significantly to achieving the behavioral goals of the learning environment. It is suitable for the level of students of the Educational Technology Department - first year.

6 - Analysis of educational skills:

The elements of the questionnaire for the list of technological empowerment skills represented by (Google Educational Applications) were identified, taking into account its design criteria, and a final list of Google Educational Applications skills was reached, after presenting it to the arbitrators, bringing the total number of main and subsidiary skills to (8) main skills and (80).) Sub-skill.

7 - Determine learning activities:

A set of learning experiences have been designed, which are represented in the roles of members of the learning environment (teacher-learners), learning tasks and activities, learning resources, and interaction tools. The student must perform the various tasks and activities, and the teacher in turn evaluates them and provides appropriate feedback to the student.

Second, the design stage, design procedures:

- Formulating educational objectives:

After completing interaction with the tasks and activities of the adaptive learning environment, students are expected to master the cognitive and performance aspects of some skills (Google Educational Applications), which were analyzed into sub-performance goals, which in total consisted of (52) behavioral goals varied in cognitive levels between... (Remembering, understanding, application, synthesis, analysis) were divided in this way (11) objectives measuring the level of remembering, (8) levels measuring the level of understanding, (36) objectives measuring the level of application, (4) objectives measuring the level of analysis, (3) Objectives measure the level of composition.

- Determine educational content:

Based on arriving at a list of behavioral objectives, the content elements of the adaptive learning environment were identified in the form of a group of videos, pictures, drawings and texts. The content was formulated and its images were defined in light of a group of educational literature on the adaptive learning environment and the importance of its support patterns, as well as skills and the importance of skills. Technological empowerment

- Designing content tracking methods:

The educational content is organized hierarchically from general to specific. To be characterized by a logical sequence, as the presentation of the topic begins with its objectives and then an

explanation of the content, taking into account the design of formative assessment methods and various activities.

Designing an academic perseverance scale:

Building the scale went through the following steps:

 Determine the goal of the academic perseverance measure:

 The goal of the academic perseverance scale is to measure the level of academic perseverance, the extent of effort and engagement in academic tasks and activities, tolerant of ambiguity by determining goal priority, and maintaining continuity of motivation for achievement and interest in performance among first-year students - Educational Technology Division.

 Sources for constructing the academic perseverance scale:

 The researcher reviewed a number of academic perseverance measures: Ihsan Nasr (2023), Amal Salem (2023), Wissam Salah (2022), Walaa Ahmed (2021), Omaima Abdel Rahim (2018), and Noha Youssef (2016).

 Preparing the initial version of the academic perseverance scale:

 In light of the research objectives, the objectives of the scale, and the characteristics of the sample, the researcher prepared the academic perseverance scale in its initial form, where the scale's phrases were formulated, with the student responding to each of the scale's phrases according to a five-point Likert response scale (very low - low - moderate - high - very high).), and the scale in its initial form consists of (51) items.

 How to apply and correct the academic perseverance scale:

 The scale included (51) statements, and in front of each statement there were five responses (very low, low, average, high, very high). The student reads each statement carefully and puts a mark (✓) under the alternative that agrees with his opinion out of the five alternatives, and the correction was The student was given (five marks) in the very low condition, (one mark) in the very high condition in the case of positive statements, while in the case of

negative statements it was (five marks) in the very high condition, and (one mark) in the very low condition.

☐ **Adjusting the measure of academic perseverance:**

Validity: The researcher calculated the validity of the scale in two ways:

• The validity of the judges for the academic perseverance scale:

To verify the validity of the scale, it was presented to (7) arbitrators in the fields of educational technology, educational psychology, and Mind health, Appendix (1) to suggest what they deem appropriate amendments (by deletion or addition) to the scale's statements.

Design of the mind wandering scale:

Building the scale went through the following steps:

☐ **Determine the goal of the Mind wandering scale:**

The goal of the Mind Wandering Scale is to measure the extent of the automatic shift in attention from the basic task to other internal or external thoughts among students of the first year - Educational Technology Division, and these thoughts may be related to the basic task or not.

☐ **Sources for constructing the Mind wandering scale:**

The researcher reviewed a number of measures of Mind wandering, namely: Taghreed Dhaif Allah (2023), Alaa Ibrahim (2022), Aisha Al-Omari (2019), and Hilmi Al-Feel (2018).

☐ **Preparing the initial image for the Mind wandering scale:**

In light of the research objectives, the objectives of the scale, and the characteristics of the sample, the researcher prepared the Mind wandering scale in its initial form, where the phrases of the scale were formulated, with the student responding to each phrase of the scale according to a five-point Likert response scale (always - often - sometimes - rarely - never). The scale in its initial form consists of (26) items.

☐ **How to apply and correct the Mind wandering scale:**

The scale included (26) statements, and in front of each statement there were five responses (very low, low, average, high, very high). The student reads each statement carefully and puts a mark (✓) under the alternative that agrees with his opinion out of the five alternatives, and the correction was The student was given (five marks) in the case of always, (one mark) in the case of never in the case of positive statements, while in the case of negative statements it was (five marks) in the case of never, (one mark) in the case of always.

Since the scale in its final form consists of (26) statements, the upper limit of its score equals (130) degrees, the minimum equals (26) degrees, and the intermediate value is (78) degrees, which represents the neutral point that indicates Mind wandering at an average level. Accordingly, scores greater than (78) indicate a high level of Mind wandering, while scores less than (48) express a low level of Mind wandering. The scale was provided with clear instructions explaining its purpose and how to respond to it.

 Adjust the Mind wandering scale:

Validity: The researcher calculated the validity of the scale in two ways:

• **The arbitrators' validity of the Mind wandering scale:**

To verify the validity of the scale, it was presented to (7) arbitrators in the fields of educational technology, educational psychology, and Mind health - Appendix (1), to suggest what they deem appropriate amendments (by deletion or addition) to the scale's statements.

• **Internal consistency validity of the mental wandering scale:**

The researcher calculated the validity of the internal consistency using the Pearson correlation coefficient to determine the degree of correlation of each statement of the scale with its total score.

Third, development stage: development procedures:

Based on the above, and in light of the list of behavioral objectives and educational content, the content of the scenario for the adaptive learning environment with two support tools (adaptive learning environment with a brief support pattern, adaptive learning environment with detailed support) was built, which is a detailed description of the elements of the adaptive environment that will be designed. It includes video clips, photos, and still and animated graphics. The two adaptive learning environment scenarios were presented to the judges, and 100% of the judges agreed on the scenario's comprehensiveness of the environment's content.

Fourth, the application stage: experimental procedures:

The researcher tested the first model of the two forms of the learning environment with two types of adaptive support (brief and detailed) on an exploratory sample of (20) students, and held an introductory session with the sample members with the aim of introducing them to what the experimental treatment material is used, how to use it, and how to proceed within the adaptive learning environment, and presenting a group Instructions and guidelines for using the learning environment, recording their reactions, recording their opinions about it, and identifying the difficulties they may face when using this environment. At the end of the session, the sample was divided into two groups. The learning environment was welcomed by the students and they showed an active willingness to learn through it in a percentage Agreement (100%) between members of the two groups, and modifications to the learning environment were taken into account according to the opinions of the arbitrators and the observations of the students.

Fifth evaluation stage: evaluation procedures:

Upon completion of learning the learning topics related to technology empowerment skills, the academic perseverance and Mind wandering scale was applied individually.

- **Preparation and preparation for the basic research experiment:**
  - The approval of the application's supervisors was obtained, in addition to the approval of the college administration.
  - The computer laboratory in the college was equipped, ensuring that the operating systems and programs installed on it were efficient and working efficiently, in addition to ensuring the availability of Internet service on all devices within the laboratory.
  - A number of introductory sessions were held for the students of the research sample before dealing with images of the adaptive environment according to the support pattern (brief-detailed) with the aim of:
  - Introducing students to the importance of the learning environment, how to make optimal use of it, and the general goal and behavioral objectives of its design and development.
  - Introducing students to the domain for images of the learning environment and the procedures for accessing it, and how to benefit from the guide to using the environment to be able to deal with it.
  - Introducing students to the importance of using the two types of adaptive support (brief and detailed), each according to their group, and using them in order to achieve the general goal and behavioral goals of the content.
  - Introducing students to how to deal with content elements, and how to use tools to interact with it.
  - Introducing students to the tasks and activities required of them and how to perform and deliver them.
  - Introducing students to the necessity of performing formative assessments to enable progress among the content elements.

- Introducing students to the importance of submitting assignments and tasks on time and emergency situations that must be communicated with the researcher to address them.

- **Performing statistical treatments:**

  After conducting the basic experiment and extracting the results, statistical treatments were performed on the students' results in the post-application of the achievement test and the skills performance observation card using the Statistical Analysis Package for the Social Sciences (SPSS).

- **These hypotheses have been verified**

Verifying the first hypothesis:

There is a statistically significant difference between the average scores of the students of the first experimental group (who studied in a learning environment with a brief adaptive support style) in the pre- and post-applications of both the academic perseverance and mental wandering scale in favor of the post-application .

Table (1) Comparison between pre- and post-applications to measure academic perseverance and male distraction in the first experimental group

Interviewer	Application	Average	standard deviation	T value	Significance level	ETA square	Effect size
mind wandering scale	Pre	111.85	9.33	14.06	0.00	0,913	big
	Post	65	11.43				
Academic persistence scale	Pre	70.20	6,59	48.17	0.00	0.992	big
	Post	208.85	16.47				

It is clear from the previous table:

There is a statistically significant difference at the level of (0.01) between the average scores of the students of the first experimental group (who studied in a learning environment with a brief adaptive

support style) in the pre- and post-applications of both: the Perseverance Scale and the mind Wandering Scale .

Given that the concept of statistical significance expresses the extent of confidence we place in the results of differences, regardless of the size of the effect of those differences; Therefore, the effect size "eta square" was calculated, and by comparing the results presented in Table (1) with the reference table for determining effect size levels, it was found that the effect size was large, as the eta square values reached (0.913, 0.992), which indicates that the size of the effect is large. The effect of the independent variable on the dependent variable is strong; This confirms the effectiveness of the experimental treatments that were conducted on the first experimental group.

secondly. Verifying the second hypothesis:

There is a statistically significant difference between the average scores of the students of the second experimental group (who studied in a learning environment with a detailed adaptive support pattern) in the pre- and post-applications of both the academic perseverance scale and the mental wandering scale in favor of the post-application.

Table (2) Comparison between pre- and post-applications to measure academic perseverance and male distraction in the second experimental

Effect size	ETA square	Significance level	T value	standard deviation	Average	Application	Interviewer
big	0.975	0.00	26.72	9.66	113.70	Pre	mind wandering scale
				6,69	38.40	Post	
big	0.985	0.00	34.23	8.74	69.75	Pre	Academic persistence scale
				18,68	209.80	Post	

group

It is clear from the previous table:

It is clear from the previous table:

There was a statistically significant difference at the level of (0.01) between the averages of the second experimental group (who studied in a learning environment with a detailed adaptive support style) in the pre- and post-applications of both: the academic perseverance scale and the mind wandering scale.

Given that the concept of statistical significance expresses the extent of confidence we place in the results of differences, regardless of the size of the effect of those differences; Therefore, the effect size "eta square" was calculated, and by comparing the results presented in Table (2) with the reference table for determining effect size levels, it was found that the effect size was large, as the eta square values reached (0.985, 0.975, 0.985) which indicates that the size of the effect is large. The effect of the independent variable on the dependent variable is strong; This confirms the effectiveness of the experimental treatments that were conducted on the second experimental group.

Third. Verifying the third hypothesis:

There is no statistically significant average difference between the three students of the first experimental group (who studied in a learning environment with an adaptive coping support style) and the second experimental group (who studied in a learning environment with an adaptive coping support style) in the dimensional application of each of: the perseverance scale, the Mental wanderlust.

Table (3)It shows the significance of the differences between the average scores of the two experimental groups in the achievement test, observation card, perseverance scale, and mental wandering scale (n = 40)

Type of significance	T value	Second trial = 20		First trial = 20		Variables
		STDDev	average	STDDev	average	
Significant in favor of the second experiment	8.97**	6.69	38.40	11.43	65	Mind wandering scale
Not significant	0.17	18.68	209.8	16.47	208.85	Academic persistence scale

It is clear from the previous table:

It was proven that there were statistically significant differences in favor of the first experimental group in the mental wandering scale,While no statistically significant differences were found in the academic perseverance scale.

Recommendations:

• It is necessary to provide different types of adaptive support in the learning environment to meet the needs of the student and take into account their individual differences and learning styles.

• It is necessary to use adaptive support patterns to the extent that helps students learn independently and move forward towards achieving educational goals.

• Design support to ensure its effective use by the learner so that it is a basic pillar that can be relied upon to advance towards learning units and topics.

Suggested research:

• Conducting the same research variables on other samples with different age characteristics to reach results that are suitable for generalization.

• Applying the independent variables found in this research with other dependent variables such as cognitive control strength, academic buoyancy, mental alertness, and self-regulation.

• The current research focused on developing academic perseverance skills and reducing Mind wandering, and the researcher suggests addressing other types of support other than the brief and detailed support patterns to develop the skills of designing and producing different digital learning resources.

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