

Micro-Learning Environment Based on Thinking Maps on Improving Perseverance among Prep School's First Grade Students

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مجلة البحوث في مجالات التربية النوعية

معرف البحث الرقمي DOI: 10.21608/jedu.2023.220468.1903

المجلد التاسع العدد 46 . مايو 2023

الترقيم الدولي

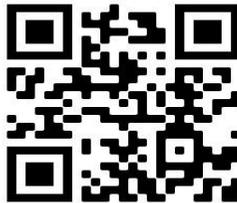
P-ISSN: 1687-3424

E- ISSN: 2735-3346

موقع المجلة عبر بنك المعرفة المصري <https://jedu.journals.ekb.eg/>

موقع المجلة <http://jrfse.minia.edu.eg/Hom>

العنوان: كلية التربية النوعية . جامعة المنيا . جمهورية مصر العربية



Abstract:

The aim of this research is to investigate the effectiveness of a micro-learning environment on improving the perseverance skills among prep school's first grade students in Mallawi Azhari Educational Administration, Mallawi Educational Administration in the academic year 2022/2023. An electronic micro learning environment was used as an experimental processing material. To achieve the objectives of the research, the researcher has followed the descriptive and experimental methodologies, using the one-set experimental design. The research group consisted of (80) male and female students and the measurement tool was (a measure of perseverance skills). An electronic micro learning environment was produced and designed, and the research group was included, which contained detailed forms, educational designs, PDF files, interactive activities, discussion forums and formative tests, and measurement tools were applied before and after learning. The results of the research showed the effectiveness of the micro-learning environment on improving the perseverance among prep school's first grade students, and the research was concluded with a set of recommendations and research proposals in the light of the results.

Keywords: Micro-learning environment, Thinking maps, Perseverance.

Introduction:

Ambition and struggle are key features that the persistent person must be characterized by, especially learners. A persistent person must have a set of specifications that make it possible for him to strive and struggle to reach his desires in the sense of having a goal that he is struggling for and seeking to achieve. In addition, he has the strength and rigidity to withstand the pressures and responsibility he faces in his life, and is characterized by diligence and hard work. Despite the frustration and fatigue he may face during difficult situations, he has a strong desire. And it is a prerequisite for perseverance that perseverant people sacrifice their time and comfort in order to achieve their personal and social goals and duties and the person, who passes difficulties and crises and sets a goal for him to reach, is considered a persistent.

(Sturman & Zappala, 2017, 1) defines perseverance as enhancing the focused effort to succeed in a task regardless of the challenges that arise, as well as the ability to overcome failures. (Stoitz, 2015) defined it as the ability to motivate oneself and do whatever the task requires despite suffering to achieve the most important goals. (Sunbul, 2019) underlined its importance for learners because it focuses the effort and diligence in the face of adversity, gives focus and attention to goals despite challenges and differences as well as patience, endurance and resilience where they exert their utmost effort and higher capacity to afford responsibility. It can be described as courage because it is considered as abandoning fear of failure or impeding the accomplishment of the task in order to achieve the goal with determination and distinct efforts.

Based on the foregoing, the researcher believes that perseverance is a mental habit that can be learned and an internal motivation that drives the individual to solve the problems facing him in an organized manner according to an approach. It is a personal desire which its aim is to reach the tasks to be achieved and he may face obstacles and has the ability to overcome them.

One of the studies on perseverance is Rao'a Genad, Manal Sultan and Saba Nadeem's study (2018), which aimed to determine the extent of practicing perseverance by the primary

school's fourth grade students. The study found that the scientific thinking skills, which are practiced moderately by the students, could contribute in practicing perseverance highly.

The study of: (Argon & Kaya, 2018; Saba Nadeem, 2016) aimed to know the effectiveness of using a meaning-building strategy to improve thinking and perseverance skills in schools and reveal the level of perseverance among learners, and a measure of perseverance has been used.

Sahar El-Katawi, Najwa Hassan's study (2016) found the nature of the relationship between academic perseverance, mental rigidity and affording ambiguity of a group of female students of the Egyptian and Saudi University. The study found a positive correlation between the academic perseverance, mental rigidity and affording ambiguity for the benefit of Egyptian University female students.

(Ali Abd-El Rahim, Hosam Monshd's study, 2018) aimed to verify the relative contribution of patience patterns to achieve perseverance among learners. The researcher used the perseverance measure to measure the patience patterns among learners, and found that patience for the hardship of life contributes to predicting perseverance among learners.

Hussin Hamadi's study (2021) examined the level of perseverance of predicting among learners and found an impact of perseverance at the predicting level according to gender and specialization variables.

(Marques & Dhiman's study, 2017) found the level of occupational stress and mental health among learners, and its results found that learners were exposed to a high level of psychological and occupational stress while having a low level, and there is a negative relationship between occupational stress and their mental health.

(Burns' study, 528, 2010) believes that perseverance includes cognitive and behavioral trends that reflect personality characteristics and it is linked to positive outcomes of mental and physical health. Perseverant individuals are characterized by internal control status, positive self-image, optimism, adaptability and flexibility on facing difficulties.

Perseverance is associated with many variables affecting a

student's success or failure to achieve his goals. The results of Ahmed El-Mahdi's study (2013) indicated a positive relationship between perseverance and enrolment goals. The results of (Oluremi's study, 2014) indicated a positive correlation between perseverance and participating in activities and attending in the classes of the students.

The results of (Rojas' study, 2015; Ibrahim Abd El-Hadi study, 2017) noted that perseverance mediates the relationship between creativity and academic achievement of the students, and the results of (Littrell's study, 2016) indicated that perseverance helps in predicting delays and laziness of the students.

The researcher believes that it is a prerequisite for the persistent to be ambitious in the sense of having a goal that he is struggling for and seeking to achieve. In addition, he has the strength and rigidity to withstand the stress and responsibility he faces in his life, and characterized by diligence and hard work. Despite the frustration and fatigue he may face during difficult situations, he should have a strong desire. And it is a prerequisite for perseverance that perseverant people sacrifice their time and comfort in order to achieve their personal and social goals and duties.

E-environments have provided new capacities for learners to interact with each other online since 2006, and growing interest in these new e-environments has led more than 10 million new users to become registered online in this new environment as well as they have discovered the capacities to interact with many users. (Nabil Jad, 2014, 433).

Studies indicate the importance of the electronic micro learning environments, such as: Hosam Abd El-Rahim's study (2019) which noted that learning within project-based learning environments, and Abd El-Rahman Abd El-Mojood's study (2019) which noted the importance of the use of e-learning environments in the learning process and the extent to which learners respond to it according to their specializations, the study of: (Dina Mohamed, 2018; Basma Ibrahim, 2018; Shaimaa El-Saeed, 2018; Ahmed Sadiq and Asim Mohamed, 2018) clarified the importance of e-learning environments in the learning process and their applicability in educational institutions.

(Ahmed, Kartiwi & Akram's study, 2011) aimed to clarify literary definitions of e-learning environments, its tools and key features, which, when designed depend on e-educational content management systems.

It is clear to us the importance of micro-learning environments in the learning process through thinking maps, which are among the paths that the learner follows in the stages of his thinking, and regarding the relationship of perseverance with thinking maps, there is a connection between them, as they depend on the brain in the sequence of ideas, the aspiration for ambition, the pursuit of more successes and overcoming difficulties. Thinking maps consist of a set of questions that the reader should ask if he wishes to think and persevere to reach his goal in several ways. Perseverance is a basic requirement for students when they face problems or challenges that prevent them from achieving their goals. Therefore, perseverance is the basis for seeking success and achieving what the learner desires.

The philosophy of thinking maps is based on main principles to improve the type of perseverance among students, which is:

1. The more the teaching atmosphere within the learning environment is dominated by the workings of mind, the more students are able to find the best method of perseverance.
2. The more perseverance skills are combined with the content of the lesson, the more students persevere with the studied course.
3. The clearer the teaching of perseverance, the greater its impact on students. (Haider Al-Ajrash, 2013, 100).

Feeling and ascertaining the research problem: The researcher identified the research problem through the following sources:

1. **Field observation:** Within the job of the researcher, during his multiple visits to Al-Azhar preparatory institutes in Minia Directorate, he noticed the weakness of the level of perseverance in its dimensions among a group of students who frequent the library through what they read in the library class or free access, and this is due to the lack of these students to improve the cognitive aspects of the dimensions of perseverance. And when these students

finished their studies in the primary stage, and their turnout for the preparatory stage, their perceptions would have expanded, and some of them always accept reading and reading in the library, and they need to instill the dimensions of perseverance in them, and sometimes they face problems need to be solved, but they need someone to help them in these processes, in a modern way and with scientific steps Also, the majority of prep school's first grade students have weaknesses in e-learning skills and their inability to upload content, answer assignments, chatting, or deal with various fast-updating web applications by accessing websites on the Internet.

2. **Exploratory study:** To find out the reliability of the research problem, an exploratory study was conducted, which consisted of surveying the opinion of prep school's first grade students, aimed at identifying the extent of their need to improve the dimensions of their perseverance through thinking maps and the use of micro-learning environments by entering the Internet, using the browser, chatting, uploading assignments and downloading them from Google Drive, answering assignments and carrying out the tasks. The exploratory study was applied to a voluntary group of (50) male and female students from prep school's first grade students from the Umm Qumos Prep Girls Institute, and the Abd El-Jawad Taha School for Basic Education in Umm Qumos. This group was chosen from both; Al-Azhar and Ministry of Education due to the availability of requirements that serve the goal of the research, represented in the library education course and the reading class in the library. The result came out as follows:

- 30 % of students have knowledge of e-learning environments, but they do not have knowledge of perseverance.
- 40% of the students expressed their desire to develop the dimensions of perseverance represented in his motivation for achievement and facing difficulties, his

ability to psychological endurance, his interest in achieving his desires, and thinking maps with its eight paths to make use of it in their reading through a micro-learning environment.

- 30% of the students had never dealt with micro-learning environments and had not been identified the dimensions of perseverance.

3. Review of previous studies: Numerous studies have dealt with the use of micro-learning environments, thinking maps, and the improving of perseverance dimensions, including:

A. Studies related to micro learning environment: such as; (Iman Shabaan Ibrahim's study, 2010; Abd El-Rahman Abd El-Mojood's study, 2019; Basma Ibrahim's study, 2018; Shaimaa El-Said's study, 2018; Dina Mohamed's study, 2018; Naira Ali's study, 2017; Nader Said's study, 2015; Nabil Jad study, 2014; Bekmurza's study, et al, 2012; Ahmed's study, 2011; Kartiwi & Akram's study, 2011), all of them indicated the importance of using micro-learning environments in the learning process, its effectiveness for the learner, and its applicability in educational institutions.

B. Studies related to thinking maps: such as; (Nahla Ismail, 2017; Shaimaa Ibrahim, 2016; Hussin Mohamed, 2016; Belal Lotfy, 2015; Mohamed Abu Sakran, 2015; Sahar El-Katawi, Najwa Hassan's study, 2016; Abdel Fattah, 2010), all of them concerned with the use of thinking maps in the collection of scientific concepts.

C. Studies related to dimensions of perseverance: such as; (Alaa El-Din AL Sherman, 2021; Sunbul, 2019; Ali Abd El-Rahim and Hosam Mohamed, 2018; Argon & Kaya, 2018; Sturman, 2017; Sahar El-Katawi, Najwa Hassan study, 2016; De Dreu et al, 2012; Ashraf Mohamed, 2011), these studies aimed to identify the impact of the use of perseverance in schools and to

reveal the level of perseverance among learners. A measure of perseverance was used and the extent of its positive use in studies. These studies revealed the nature of the relationship between the academic perseverance, mental rigidity and affording ambiguity among a group of female students, and it also found a positive correlation between the academic perseverance, mental rigidity and affording ambiguity for the benefit of the female students who used perseverance scale.

The problem of the research:

As can be noticed above, it was possible to determine the problem of the research; perseverance is a mental habit that can be learned and an internal motivation that drives the individual to solve the problems facing him in an organized manner according to a method, in order to reach the goal to be achieved and may face obstacles that he can overcome. This trend requires a method characterized by the linkage of the curriculum with the dimensions of perseverance in a modern technological manner that keeps pace with the requirements of the times.

To be concluded, this research attempts to answer the following main question:

What is the impact of a micro-learning environment based on thinking maps on improving perseverance dimensions among prep school's first grade students?

More specifically, this research attempts to answer the following questions:

1. What educational design model is proposed to build a micro-learning environment based on thinking maps?
2. What criteria are needed to design a micro-learning environment based on thinking maps?
3. What is the impact of a micro-learning environment based on thinking maps on improving the attainment of skill aspect of perseverance dimensions for prep schools' first grade students?
4. What kind of relationship between thinking maps and perseverance and perseverance for prep schools' first grade students?

Research hypotheses:

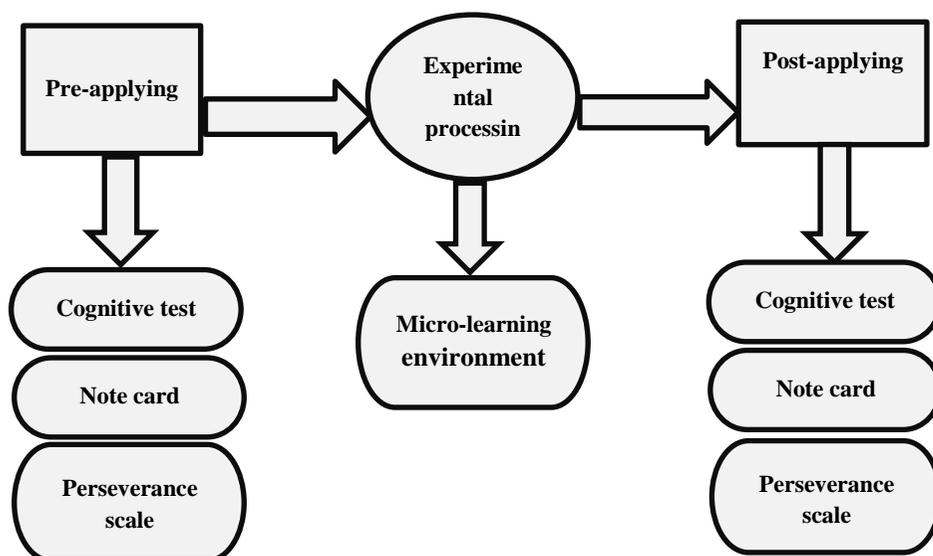
1. There is a statistically significant at a level (0.05) between the two average scores of the proposal group through the pre and post applying of the proposal in the perseverance level after learning through a micro-learning environment based on thinking maps in favor of post-applying.
2. There is a statistically significant correlation at a level (0.05) between improving the cognitive aspect and the performance aspect of the perseverance level for the prep school's first grade students.

The significance of the research:

- **Theoretical significance:** In response to what many educators and specialists call for the need to use modern technologies to improve perseverance in all its dimensions.
- **Applied significance:**
 - Shedding light on the importance of the role played by thinking maps in deepening the student's ability to face difficulties in order to overcome them through micro-learning environments by relying on perseverance.
 - Directing the attention of those concerned with the preparation of programs and curricula to the interest and benefit from the era of technology and information and the emergence of micro-learning environments through web applications with their modern versions in improving perseverance skills.

The experimental design of the research:

The research used a single-set semi-experimental design that depends on measuring perseverance skills in its dimensions after integrating the research group into the learning process, through the measurement tool used in the research.

Figure1: The experimental design of the research**Research methodology:**

The experimental methodology was used to prepare the theoretical framework, identify the needs of prep school's first grade students in Mallawi Azhari Educational Administration and Mallawi Educational Administration, extract a list of skills they need to improve, prepare content elements, and demonstrate the impact of the independent variable (micro-learning environment) on the dependent variable (perseverance skills) for prep school's first grade students. It represents the integration of the research group into the learning process through the micro-learning environment, and then post-applying the measurement tool (the perseverance scale).

Selectors of the research:

1. **Human selectors:** A volunteer group of eighty (80) male and female students from the first grade prep stage in Mallawi Azhari Educational Administration, Mallawi Educational Administration.
2. **Objective selectors:** Educational content related to perseverance skills through a micro-learning environment that combines Web 2 and Web 3 which represented by Ajax, Mashup, Rich Internet Application (RIA). This environment includes Blogs, Wiki, YouTube, Facebook, Twitter, Instagram and the Really Simple Syndication

(RSS), this is through the library education course and the environment will be designed with design standards according to an organized scientific method through the use of electronic micro learning environment based on thinking maps.

3. **Time selector:** This research has been applied during the period 11/02/2023 to 16/03/2023 AD.
4. **Place selector:** The spatial boundaries consisted of the Internet, computer labs, school libraries and institutes of Mallawi Azhari Educational Administration, Mallawi Educational Administration.

Tools of the research:

The following tools were used in this research, which were prepared by the researcher:

1. **Data collection tools:**
 - A. A questionnaire (exploratory study); to ascertain the extent to which the prep school's first grade students have the skills of perseverance
 - B. A questionnaire; to determine a list of perseverance skills to be improved among prep school's first grade students in Mallawi Azhari Educational Administration, Mallawi Educational Administration.
 - C. A questionnaire; to determine a list of criteria necessary to design a micro-learning environment based on thinking maps.
2. **Experimental processing material:** An electronic micro learning environment based on thinking maps was used.
3. **Measurement tool;** which is the perseverance scale.

Search variables:

1. **The independent variable:** An electronic micro learning environment based on thinking maps.
2. **The dependent variable:** Perseverance skills.

Search terminology:

Micro learning environment:

It is defined procedurally as one of the types of e-learning environments which mean learning through small units that focus on learning a skill or cognitive competency and are presented alongside the learning content not a substitute for it, including separate and diverse services to serve the educational side.

Thinking maps:

Organized and planned teaching procedures for teaching that employ line drawings that clarify the cognitive content, reflect the levels of thinking, and enhance learning by sight, and consist of eight visual schematic maps that help the learner find relationships, connections, and a deep understanding of the content (Ahmed Abd El-Hadi Nssar, 7, 2015).

A micro-learning environment based on thinking maps:

It is a content that is presented in a multimedia-based manner that supports learning processes and makes it more interactive. This content is presented in several forms that depend on the computer in the sequence of ideas, and improve the role of the learner and help him in improving his educational skills and experiences.

Perseverance:

It is defined procedurally as the degree that the students obtain through the answer they answer in the light of the perseverance scale, which was used in the current study.

Theoretical framework and previous studies:

The theoretical framework consists of two sections; micro-learning environments, and perseverance.

The first section - Micro learning environments:

E-learning environments are one of the educational technology applications that support learning processes; as they depend on multimedia that enriches learning processes and makes it more interactive. These environments can be designed and developed in various forms such as computer-based learning environments, computer-assisted learning, internet-based learning environments, and virtual reality environments (Eristi & Belet, 2010, 32).

Micro-learning environments benefit the learner by providing him mechanisms for interaction between him and the content he learns, and then there is a return through e-communication between them, so that they can verify the correctness of their answers, and education moves in this case from being traditional education to learning characterized by active participation, and there has been a boom in the use of education technology and learning and its integration. The elements of the educational situation were affected by technology, especially the teacher; as his role changed from a knowledge transmitter to a facilitator of the learning process, so the teacher now designs the learning environment, participates in it, follows up on the progress of the learners, guides and directs them.

1. The importance of micro learning environments:

The importance of electronic micro-learning environments is represented in: providing a flexible method for education and learning, improving the performance of the students, and helping them build and improve their skills and experiences by using technology (Anderson, 2016).

2. The importance of micro learning environment for the learner:

Micro-content activities can be distributed within a different learning community and used by other learners for specific purposes, so micro-content can be URL-addressable, topic-categorized or making tags for each micro-learning session when posted online. Micro-content is also used as a topic for a discussion on a group of important social issues, and it can also be used within the micro-learning environment to learn ongoing topics in the community arena (Rogers, 2016, 135).

Ahmed Ali's study (2019) indicates the reveal of the effectiveness of a micro-learning environment based on two navigational tools (content tables - cognitive maps) in improving the skills of computer and information technology among prep school's first grade students who are deaf. The results indicated that the navigational tool of the type (cognitive maps) within the micro-learning environment is better than the navigation tool of the type (content tables).

(Ahmed Sadiq, Asim Mohamed's study, 2018) aimed at improving the skills of designing and producing smart phone applications and building confidence in digital learning among Faculty of Education students, by designing an e-learning environment based on the participatory web. The results of the study indicated that the design of the e-learning environment has contributed to improving the skills level of designing and producing smart phone applications, and contributed in building confidence in digital learning.

Mona Mohamed's study (2018) measured the effectiveness of using a virtual learning environment, based on cognitive journeys, through the social network "Facebook", in improving interaction skills and e-participation among university students, in light of the quality standards of the virtual learning environment, which is based on cognitive journeys. The results revealed the effectiveness of using a virtual learning environment based on cognitive journeys via Facebook network in teaching educational techniques on improving interaction and e-participation skills among Faculty of Education students enrolled in the educational technology course.

Raja Ali's study (2018) sought to determine the most appropriate type of the interaction between the patterns of learning aids and the levels of their provision through micro-learning environments and their effectiveness on the development of programming skills and usability among students of educational technology. The study found the extent to which these educational environments are usable and the extent to which the micro-learning environments help in the learning process.

3. The importance of micro learning environment for the teacher:

Shawqi Mohamed (2018) indicates that the process of communication between the teacher and the learner within the learning environment while studying the content is important, and this communication aims to support the learning process, evaluate students' performance, and solve any problems encountered. This type of interaction takes place through various e-media, such as: Twitter, e-mail, video or audio chat rooms, and this means that

interaction includes multiple aspects, such as counseling and guidance, and personal dialogue about learning topics.

4. Micro-learning environments conditions

Raja Ali (2018) identified a set of conditions and requirements when designing micro-learning environments, including:

- Goals should be set and highly focused, and they should be procedural goals.
- To be submitted in a short time so that it focuses on the idea in the least time.
- Independence; as each unit is independent from each other, even if it is part of a broader training program, and therefore the micro-learning has the ability to display a module without the need to go to previous units or versions in order to learn.
- Updating: The fact that micro-learning is based on micro-units makes it easy to update these units when needed.
- Obtaining feedback through a quiz to assess the level of the educational content. In the case of mastering the skill, a short video is presented, for example, expressing the extent of progress, to be evidence for the learner of his progress.

(Hibberson, 2013) presented the steps that should be taken to build an electronic micro-learning environment, which are:

- Sharing: In the sense of sharing presentations, video files, scientific content, and scientific ideas of common interest with friends (learning goal), through tools available on the Internet such as: (Slideshare, Tumblr, Edublogs, Youtube, ets)
- Mobilizing the ideas: By depending on the opinions and ideas of peers and people related to your topic of interest, and Twitter in particular is a way to find out the latest experiences on any particular topic, and to benefit from experiences through a global audience by following a tweet on the same topics.
- Searching and exploring deeply: Through the micro-blogs through which practices and resources are shared in short blogs (Twitter, My guide to Twitter, Plurk, Utterli). But if

you want to search for more information on the topic of interest and search more deeply for knowledge, you should go to blogs (Word press , Blogger, Typepad, Alltop Technorati) as there are text information or videos related to the topic of interest.

- Organize and Tag: Organize and arrange the most reliable educational resources through the use of (Delicious, Dugo, Pinterest) to share them with your colleagues through your personal learning environment.

Iman Shabaan's study (2020) aimed to develop two levels of feedback in a micro-learning environment via the mobile web and the extent of the impact of any of the two variables on the other and the extent to which the impact of the micro-learning environment accompanied by two levels was determined. The results showed the feedback patterns used in the micro-learning environment with an effective impact in developing programming skills educational websites.

Ismail Omar's study (2017) also sought to develop the skills of dealing with the Internet by revealing the effectiveness of a micro-learning environment based on navigation tools and Info graphic, and designing and producing a micro-learning environment that contains course skills. The results of the two studies reached the effectiveness of the micro-learning environment in developing computer course skills and information technology and its impact on achieving learning within a personal learning environment and the impact of the micro-learning environment on fast interaction and transfer of complex scientific information rapidly.

General comment on the section of micro-learning environment

As can be noticed above, it is preferable to use micro-learning environments in the educational process for prep school's first grade students, which is appreciated in applying various technological ways. This period has become a period that depends on the mental ability of man, and in order to meet this challenge, it has become necessary for us to prepare conscious generations capable of dealing with experiences with perfection, and developing mental capabilities in an organized scientific manner

based on a culture of creativity. Therefore, the need arose to improve the divergent thinking skills among students, especially at the beginning of the preparatory stage.

The second section – Perseverance:

1. The concept of perseverance:

Perseverance is a mental habit that can be learned and an internal motivation that drives the individual to solve the problems facing him in an organized manner according to a method, in order to reach the goal to be achieved and may face obstacles that he can overcome, so perseverance can be defined.

2. The importance of perseverance:

- Perseverance makes the learner work hard, determined and diligent.
- Perseverance makes the learner continue the work he is doing and communicate without laxity, no matter how long it takes.
- Due to perseverance, the learners can face difficulties without frustration and overcome them.
- Perseverance is associated with passion, which comes from the learner's hobby and desire (Saad Ali, 2023).

The researcher believes that the importance of perseverance for the learners is very important as it makes him continue to focus on reaching an advanced level and enhances his passion to continue his requirements to reach his desires. Perseverance makes the learner distinct from others, and has the qualifications, factors, and ingredients for success from others. With perseverance, the learner becomes a contributor to mental and intellectual development and works to sustain it

Perseverance Predictors:

One of the perseverance predictors is that a persistent person tends to pursue long-term goals, has the ability to overcome challenges and obstacles, is far from failure, seeks attention and steadfastness, and seeks long periods of hard work without boredom or laziness. The variation of individuals and their ability to be characterized by these qualities may be explained by educational attainment, serious striving for work and excellence in it, working towards professional achievement, striving for self-

efficacy and self-control, and striving to achieve academic achievement. (Aladdin Al Sherman, 2021, 144)

The perseverance predictors are determined by the researcher in the tendency of learners to embrace beliefs that distinguish them from others, abilities and potentials whose purpose is to feel their identity and privacy for self-fulfillment. Therefore, it is possible to predict learners who have features that characterize them without others, that make you feel that they are persistent, patient, aware, conscientious, compatible, and inclined to social life, to make friendships that lead them to success.

Perseverance conditions:

Burns Banste (2010, 528) believes that perseverance includes cognitive and behavioral trends that reflect personality traits and is associated with positive mental and physical health outcomes. Persistent people are distinguished by their inner locus of control, positive self-image, optimism, and the ability to adapt and the flexibility when facing obstacles.

Perseverance is associated with many variables affecting the student's success or failure in achieving his goals. The results of Ahmed Al-Mahdi's study (2013) indicated that there is a statistically significant positive relationship between perseverance and the goals of enrollment in the study.

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The results of Rojas's study (2015) and Ibrahim Abd El-Hadi's study (2017) indicated that perseverance mediates the relationship between creativity and academic achievement among students, and the results of Littrell's study (2016) indicated that perseverance helps in predicting delays and laziness of the students.

The researcher believes that it is a prerequisite for the persistent to be ambitious in the sense of having a goal that he is

struggling for and seeking to achieve. In addition, he has the strength and rigidity to withstand the stress and responsibility he faces in his life, and characterized by diligence and hard work. Despite the frustration and fatigue he may face during difficult situations, he should have a strong desire. And it is a prerequisite for perseverance that perseverant people sacrifice their time and comfort in order to achieve their personal and social goals and duties.

Research Procedures:

First - The necessary criteria for designing a micro-learning environment based on thinking maps:

Setting the necessary criteria for designing a micro-learning environment based on thinking maps aims to go through:

- Theories and principles on which learning based on thinking maps is based
- Services and technologies through which these environments can be produced

The researcher identified some of the necessary criteria for designing a micro-learning environment based on thinking maps by relying on the theories and principles on which the design of learning environments is based and through which the educational design model was designed. From the design of the model, the necessary standards for designing a micro-learning environment based on thinking maps were adopted on two main areas: the field of Educational Standards and the field of Technical Standards. Among the standards are the following:

1. A micro-learning environment based on thinking maps supports the application of knowledge
2. The environment provides tools that help in communication between the teacher and the learner and among the learners with each other
3. The environment provides a diverse library of audio and visual learning resources
4. The environment allows learners to control and dominate their own learning
5. The environment allows learners to easily exit from it at any time by choosing and determining their learning times

Second - The proposed educational design model for building a micro-learning environment based on thinking maps:

A good educational design model ensures that learners' interest is maintained and their motivation is raised towards learning, and because the design of a micro-learning environment requires the researcher to follow one of the educational design models that are appropriate to the characteristics of prep school's first grade students who frequent the library and practice library activities, including the library education course; Therefore, the researcher built the learning environment according to the ADDIE model, as it is considered the basis from which all models grew out. Therefore, the researcher has chosen it in designing the environment; as it contains all the operations included in the other models, as well as it is characterized by ease and clarity. The researcher made some modifications to the model, where the researcher added to the analysis stage the steps of deriving the cognitive and skillful skills, which the research aims to acquire for the students after conducting an analysis of the library education course for the first grade of prep school and presenting the results of the analysis to the experts to determine the skills related to the topics of library education course in the first grade of prep school.

Construction of the experimental processing material:

The experimental processing material was constructed according to the general model (ADDIE) in the construction of the experimental processing material; as it contains all the processes included in other models. The general model is the basis of all educational design models, all of which revolve around five basic stages:

The first stage – Analysis stage: This stage includes the following actions:

1. **Problem Identification and Needs Assessment:** The low level of perseverance skills among prep school's first grade students in Mallawi Azhari Educational Administration and Mallawi Educational Administration.
2. **Setting the overall objective:** Developing perseverance skills using electronic micro learning environment services based on thinking maps among prep school's first grade

students in Mallawi Azhari Educational Administration and Mallawi Educational Administration.

3. **Analysis of the characteristics of the research group:** It is represented in the general characteristics of the prep school's first grade students, the Azhari research group at the Umm Qumos Preparatory Institute for Girls, Umm Qumos Preparatory Institute for Boys, Umm Qumos Preparatory School (El-Shahid Mahmoud Nasser Rajab School) and Abd El-Jawad Taha School for Basic Education in Um Qumos, and their average age is 12 years, and they were exposed to previous experiences in Library education course through the content of the course, and has a diverse social and economic level.
4. **Identification of the learning environment:** A micro-e-learning environment based on thinking maps was chosen in the application of the research experiment. This is due to its effectiveness for the learner and the possibility of its application in educational institutions, as well as it meets the recommendations of several studies, including: (Iman Shabaan, 2020; Abd El-Rahman Abd El-Mawjod, 2019; Basma Ibrahim, 2018), which recommended the need to take advantage of the micro-learning environment in education because of its advantages and capabilities.
5. **Setting the dimensions of the perseverance scale:** To conduct the analysis process, the researcher looked at the books of library education course for the prep stage in its three grades, and then focused on the course of the first grade of preparatory school, since the subjects of this stage and the content are linked and integrated, such as indexing and classification. Then, he extracted and wrote down the concepts and skills required for perseverance and wrote them down in the analysis form, according to the procedural definitions of the categories of mental, scientific and practical skills analysis that students perform, which give them intended and planned experiences. After conducting the analysis process, the researcher found that the analysis sample dealt with three main dimensions of the perseverance

scale, as well as using the opinions of experts in the field of technology to determine the list of dimensions of the scale, which were represented in (3) main dimensions, under which (21) sub-dimensions are located.

6. **Identification of learning tasks and activities:** When designing educational activities, it was taken into account that they are related to the educational objectives to be achieved, and the educational content provided through the learning environment, taking advantage of the social capabilities provided by the environment through the participation of learners in discussion and exchange of opinions about the activities required to know the validity of their response to these activities.
7. **Identification of learning resources and sources:** The available resources were represented in having a computer connected to the Internet for each learner of the research group, and the availability of a set of programs on these computers, namely: a Web Browser and "Adobe Flash Player"; in order for the research group to enter the learning environment, the experimental processing material contained a set of educational designs within the environment, including activities and e-test, which were produced and then uploaded to the Internet and distributing the access link to the research group, as well as a set of text files saved as PDF.

The second stage - Design stage:

1. **Preparing a list of objectives and content elements:** In the light of the final skill list, and the general objective of the learning content, the procedural objectives expected of learners have been set. The identification of objectives took into account a realistic formulation that could be observed and measured. Then, the researcher compiled elements of educational content covering procedural objectives after reviewing previous studies referred to in the skill list building sources. They were logically put in order, to achieve those goals. Then, the list was reviewed by (5) peer-reviewers in the field of education technology, curricula and teaching methods; to give their opinion on the appropriateness of the

content and educational objectives. The peer- reviewers agreed 100% on the suitability of the educational objectives and content to achieve the general goal. After doing the modifications proposed by the peer-reviewers, the list of goals and content elements was done in its final form.

2. **Content relay style design:** The content was divided into three different modules arranged in a logical order according to the library education course for the first grade of prep school, then the researcher created and designed the micro-learning environment, and uploaded the content to be studied by the members of the research group through videos and PDF files. The content show will begin with the title of the module, followed by the general objective, then the educational objectives to be achieved, followed by an explanation of the content of each module, then doing the activity and answering the test after each module, so that the members of the research group exchange with their colleagues and with the researcher the questions related to the module 's subject; in order to take advantage of the capabilities of the environment and demonstrate its effectiveness. After finishing learning and studying the module, learners present the required activity and the answers to the test; to be evaluated by the researcher, his grades monitored, and then share and exchange opinions with all the group members on the various activities offered by them.
3. **Education and Learning Strategies Design:** A vision of how content is presented to research group members is put. Moreover, through research variables, the researcher relied on learner-centered learning strategies that make their role positive, so he focused on the use of an individual learning strategy, in which the learner is self- reliant in showcasing educational content to develop the knowledge and skills required. This happens via interacting with internal links that are posted across the platform. Besides, the strategy of discussion and dialogue has been used through discussion forums on learning topics and chat service between learners or through their communication with the researcher to

respond to their queries and exchange different views. Furthermore, the collaborative learning strategy has been used through the performance of educational activities, where learners collaborate in small groups to perform activity after finishing each lesson, and then deliver it to the teacher through the platform to be evaluated and provided by feedback. Those strategies have been used because they are suitable for the age level of the group of the research sample. The strategy is designed in detail to include the following elements:

Figure 2: Diagram of designing the general strategy for in-environmental learning

| Serial number | Title of the module | Objectives | Activity | Content of the module | Quiz | Self-evaluation |
|---------------|---------------------|------------|----------|-----------------------|------|-----------------|
| | | | | | | |

4. Design interaction methods: The researcher focused on taking advantage of the multiple patterns of interaction methods offered by the micro-learning environment as an experimental processing material for research, represented in the interaction between members of the research group and content through links. Besides, the interaction of members of the research group through answering the quiz, doing and practicing activities, responding to learners' questions and queries, and interaction between members of the research group through participation in the various panels. In addition, there is an interaction between the members of the research group and the interface of the micro-learning environment, through browsing and downloading files.

The third stage - Development stage:

1. Identification of software requirements and multimedia production: Media production requires a range of montage and processing software (Microsoft Word 2016 - Adobe Photoshop - Camtasia Studio 8.0 - Microsoft Forms). These software programs were used to produce multimedia (text,

images, graphics, videos). All media were presented to (3) education technology experts who indicated the media's validity and readiness.

2. **Compilation and production of multimedia used in the program within the environment:** Adobe Flash 8.0 was used to add kinetic effects, program activities and tests, provide feedback and reinforcement to the students, and link the program screens according to the flow map that he designed. Linear programming was used to move students forward while learning the module and a link to the environment was created online, which is; http://www.edu4fut.com/Dr_Ali_Freez_2, and distributed to the research group with password distribution.
3. **Exploratory experiment:** The exploratory experiment was conducted on a group of (25) prep school's first grade students in Mallawi Azhari Educational Administration during the period from 11/02/2023 to 16/02/2023. The researcher uploaded the educational content to the environment, responding to their questions, queries, and discussion. All the feedback and opinions of learners were recorded in the exploratory experiment on the experimental processing material provided through the environment and its features. Then, measurement tools were applied to learners and their grades were statistically monitored and processed.
4. **The fourth stage - Application stage:**

The application stage was done by making the experimental processing material available online, and being used by the research group. This will be addressed in more detail in the part of the basic research experiment.

The fifth stage - Estimation stage:

This stage involved evaluating the cognitive and skill's aspects following students' completion of the content study, through measurement tools used in research; and then analyzing, discussing and interpreting the results.

Building measurement tools

1. **Preparing the scale:** The perseverance scale was prepared and designed to verify the suitability of the scale's phrases

and instructions for the students, and the soundness of the linguistic formulation and its suitability for their age and mental level. The peer reviewers suggested rephrasing the paragraphs, deleting some of them or replacing them with more appropriate ones, and the scale was modified in the light of the opinions of the peer reviewers. The scale, in its initial form, consisted of three main dimensions and thirty sub-phrases, and the scale in its final form, after modification, consisted of three main dimensions, each one consisted of seven phrases, and in its final form consisted of (21) phrases.

2. **Scale correctness:** There are three choices for each dimension of the scale (Always - Sometimes - Never). A mark (✓) is placed in front of one of the three phrases.
3. **Application of the scale:** The research was applied to an exploratory sample of (25) male and female students from the prep school's first grade students other than the original research group, to ensure the clarity of the scale instructions and the appropriateness of its phrases, and to calculate its stability. It was found that the scale instructions and its phrases are clear and there is no ambiguity in them.
4. **Psychometric properties of the perseverance scale:**
 - A. **Authenticity:** The authenticity of the scale was calculated by:
 - (1) The authenticity of the peer reviewers referred to above.
 - (2) Factor analysis, where this type of authenticity depends on the use of the exploratory factor analysis method, and it was calculated for the scale in its initial forms through the correlation matrix of the scores of a group those consisted of (80) participants from the prep school's first grade students. The exploratory factor analysis was carried out according to the following steps:
 - Calculating the adequacy of the size of the research group to conduct the factor analysis

using K.M.O Test (Kaiser-Meyer-Olkin Measure of Sampling Adequacy), where the value of this test extends between 0 and 1, and its value in the analysis of this scale was (0.841), which is greater than the lowest value required by Kaiser, which is (0.50), and thus it is possible to judge the sufficiency of the sample size to perform the factor analysis.

- Conducting the factor analysis using the basic components method using the (SPSS) program, and the researcher took the Guilford test to find out the limit of the statistical significance of the saturations, which is to consider the saturations that reach (0.30) or more as significant saturations.
- To give a psychological meaning to the extracted components, they were rotated orthogonally using the Kaiser Varimax method, and in light of the results of the factor analysis, it was possible to extract three main factors, the eigenvalue of each one is greater than 1, and the following table shows that:

Table 1: Factors saturations extracted after orthogonal rotation of the persistence scale

| Serial number | Factors | | | Serial number | Factors | | |
|---------------|---------|--------|-------|---------------|---------|--------|-------|
| | First | Second | Third | | First | Second | Third |
| 1 | 0.345 | | | 12 | | | 0.449 |
| 2 | 0.522 | | | 13 | | | |
| 3 | 0.418 | | | 14 | | | 0.338 |
| 4 | 0.514 | | | 15 | | 0.487 | |
| 5 | | | 0.492 | 16 | | 0.427 | |
| 6 | 0.67 | | | 17 | | 0.452 | |

| | | | | | | | |
|-------------------|-------|--|-------|----|---------------|--------------|---------------|
| | 5 | | | | | | |
| 7 | 0.330 | | | 18 | | 0.358 | |
| 8 | | | 0.542 | 19 | | 0.460 | |
| 9 | | | 0.610 | 20 | | 0.645 | |
| 10 | | | 0.354 | 21 | | 0.494 | |
| 11 | | | 0.506 | - | - | - | - |
| Eigenvalue | | | | | 2.472 | 2.176 | 2.140 |
| Variance | | | | | 11.770 | 10.36 | 10.190 |

It is clear from Table (1) that:

- The first factor included (6) phrases that were saturated with a statistically significant saturation, their values ranged between (0.330: 0.675), where all of its phrases were saturated with positive saturation, which are the phrases with numbers (1-2-3-4-6-7), and their value reached the eigenvalue of this factor (2.472), and it explains the percentage (11.770) of the total explained variance. By examining the content of its phrases, this factor can be called (**self-motivation and facing difficulties**), as it is the dominant characteristic of the phrases of this factor.
- The second factor included (7) phrases that were saturated with a statistically significant saturation, their values ranged between (0.358: 0.645), where all of its phrases were saturated with positive saturation, which are the phrases with numbers (15-16-17-18-19-20-21). The value of the eigenvalue of this factor was (2.176), and it explains the percentage (10.364) of the total explained variance. By examining the content of its phrases, this factor can be called (**interest in achieving desires**), as it is the dominant characteristic of the phrases of this factor.

- The third factor included (7) phrases that were saturated with a statistically significant saturation, their values ranged between (0.338: 0.610), where all of its phrases were saturated with positive saturation, which are the phrases with numbers (5-8-9-10-11-12-14). The value of the eigenvalue of this factor was (2.140), and it explains the percentage (10.190) of the total explained variance. By examining the content of its phrases, this factor can be called (**Psychological stamina and non-stop work**), as it is the dominant characteristic of the phrases of this factor.
- There is one of the scale phrases that did not have any statistically significant saturation, as its saturation was less than (0.30), which is the phrase with numbers (13), and accordingly it was deleted, and the number of the scale phrases became (20) phrases.

(3) **Internal consistency:** the scale was applied to (80) participants from the prep school's first grade students, in order to calculate the internal consistency of the scale phrases by calculating the correlation coefficient between the score of each phrase and each score of the dimension to which it belongs and the total score of the scale:

Table 2: Correlation coefficient between the score of each phrase and each score of the dimension to which it belongs and the total score of the perseverance scale

| Serial number | Related to dimension | Related to the scale | Serial number | Related to dimension | Related to the scale | Serial number | Related to dimension | Related to the scale |
|---------------|----------------------|----------------------|---------------|----------------------------|----------------------|---------------|----------------------|----------------------|
| 1 | **0.471 | **0.441 | 8 | **0.473 | **0.438 | 15 | **0.537 | **0.464 |
| 2 | **0.453 | **0.442 | 9 | **0.506 | **0.489 | 16 | **0.546 | **0.539 |
| 3 | **0.573 | **0.534 | 10 | **0.563 | **0.503 | 17 | **0.489 | **0.466 |
| 4 | **0.537 | **0.440 | 11 | **0.547 | **0.499 | 18 | **0.503 | **0.419 |
| 5 | **0.552 | **0.513 | 12 | **0.446 | **0.435 | 19 | **0.488 | **0.463 |
| 6 | **0.591 | **0.406 | 13 | Omitted in factor analysis | | | 20 | **0.484 |
| 7 | **0.463 | **0.425 | 14 | **0.592 | **0.508 | 21 | **0.522 | **0.509 |

It is clear from Table (2) that all the values of the correlation coefficients between the score of each phrase and each score of the dimension to which it belongs and the total score of the scale are statistically significant at the level (0.01), which indicates the internal consistency of the scale.

B. Stability: The stability of the scale was calculated by the following:

(1) **Half-segmentation:** The researcher calculated the correlation coefficient between the two halves of the scale after applying it to the experimental group. The following table shows the stability coefficient of the scale using the half segmentation before correction and after correction according to the Spearman and Brown equation:

Table 3: The stability of the persistence scale using half segmentation

| Dimensions of the scale | stability coefficient using half segmentation way | |
|---|---|----------------|
| | Post- correction | Pre-correction |
| Self-motivation and facing difficulties | 0.778 | 0.638 |
| Interest in achieving desires | 0.798 | 0.664 |
| Psychological stamina and non-stop work | 0.782 | 0.641 |
| Overall score | 0.831 | 0.712 |

It is clear from Table (3) that the stability coefficients after correction for the dimensions of the scale ranged between (0.778-0.798), and for the total score they reached (0.831), which are statistically acceptable values. This indicates the stability of the scale.

(1) Alpha Kronbach: alpha coefficient of Kronbach was used to calculate the stability of the scale, after applying the scale to the experimental group. The following table shows the stability coefficient:

Table 4: Alpha stability coefficients for the dimensions and the total score for the perseverance scale

| Serial number | Dimensions of the scale | Stability coefficient |
|---------------|---|-----------------------|
| 1 | Self-motivation and facing difficulties | 0.764 |
| 2 | Interest in achieving desires | 0.758 |
| 3 | Psychological stamina and non-stop work | 0.773 |
| - | Overall score | 0.849 |

It is clear from Table (4) that the stability coefficients for the dimensions of the scale ranged between (0.758-0.773), and for the total score they reached (0.849), and all of them are acceptable stability coefficients, which indicate confidence in the results that can be reached from the application of the scale.

Basic experimental procedures for research:

The basic experiment for research lasted four weeks, from 18/02/2023 to 16/03/2023, where it went through several stages:

- 1. Selection of research group:** (80) male and female students were selected from the prep school's first grade students at the Umm Qumos Preparatory Institute for Girls, Umm Qumos Preparatory Institute for Boys, Umm Qumos Preparatory School (El-Shahid Mahmoud Nasser Rajab School) and Abd El-Jawad Taha School for Basic Education, who study library education, who volunteered to participate in the research experiment from all administrations of the directorate.
- 2. Preparation for experimentation:** by obtaining administrative approvals.
- 3. Application of experimental processing material:** the link for the environment, which is; http://www.edu4fut.com/Dr_Ali_Freez_2 was distributed and accessed for study through it, and the Internet was prepared to access the program within the micro-learning

environment on the computers available in the computer rooms of the two schools and institutes.

4. Application of measurement tools: perseverance scale.

Research results:

First - Introducing the results of the research in the light of its questions:

To answer the first question, which stated that:

What is the proposed educational design model for building a micro-learning environment based on thinking maps?

It was answered within the research procedures, where the experimental processing material was built according to the general model of educational design "ADDIE".

To answer the second question, which stated that:

What are the necessary criteria for designing a micro-learning environment based on thinking maps?

It was answered within the research procedures, as it was represented by the researcher identifying some criteria necessary to design a micro-learning environment based on thinking maps by depending on the theories and principles on which the design of learning environments is based, through which the educational design model was designed. The researcher followed the steps of deriving the cognitive and skillful skills that aim to provide it to students such as analysis, design and construction until he completed the model. The necessary criteria for designing a micro-learning environment based on thinking maps were adopted on two main areas: Educational Standards Field and Technical Standards Field.

To answer the third and fourth questions, which stated that:

What is the effect of a micro-learning environment based on thinking maps on improving the achievement of the skill aspect of the perseverance dimensions of prep school's first grade students?

What is the type of relationship between thinking maps and perseverance among prep school's first grade students?

Both questions were answered by testing the validity of the research hypotheses.

Second - Introducing the results of the research in the light of its hypothesis:

To test the validity of the first hypothesis, which stated that:

There is a statistical difference of factor at the level of (0.05) between the average scores of the research group in the pre and post measurements in the perseverance scale as a result of learning through the micro-learning environment based on thinking maps in favor of the post application.

To verify this hypothesis, the researcher used the "t" test for two related samples, and the Eta squared (η^2) to measure the effect size, as in the following table:

Table 5: The value of "t" and its statistical significance for the differences between the average scores of the research group in the pre and post measurements of the perseverance scale (n = 25 male and female students)

| Variable | Measurement | Arithmetic mean | Standard Deviation | Average Grades | Scale Deviation | "t" value | Sig level | η^2 value | Effect Size |
|---|-------------|-----------------|--------------------|----------------|-----------------|-----------|-----------|----------------|-------------|
| Self-motivation and facing difficulties | Pre | 9.720 | 1.762 | 3.160 | 2.392 | **6.604 | 0.01 | 0.645 | High |
| | Post | 12.880 | 2.818 | | | | | | |
| interest in achieving desires | Pre | 10.001 | 1.443 | 3.480 | 2.143 | **8.119 | 0.01 | 0.733 | High |
| | Post | 13.480 | 2.382 | | | | | | |
| Psychological stamina and non-stop work | Pre | 9.600 | 1.707 | 3.780 | 2.853 | **6.448 | 0.01 | 0.634 | High |
| | Post | 13.280 | 2.908 | | | | | | |
| Overall score | Pre | 29.320 | 2.410 | 10.320 | 4.288 | **12.031 | 0.01 | 0.857 | High |
| | Post | 39.642 | 4.777 | | | | | | |

It is clear from Table (5) that the "t" value for the difference between the average scores of the research group in the pre and post measurements of the perseverance scale (dimensions and overall score), respectively, was (6.604- 8.119- 6.448- 12.031), which are statistically significance values at the level of (0.01) in favor of the post-measurement, which means rejecting the zero hypotheses and accepting the alternative hypothesis, i.e. "There is a statistically significance difference between the average scores of the research group in the pre and post measurements of the perseverance scale as a result of learning through the micro-learning environment based on thinking maps in favor of the post-measurement".

It is also clear from Table (5) that the values of Eta squared (η^2) for the effect size of the micro-learning environment based on thinking maps on perseverance (dimensions and total score), respectively, amounted to (0.645- 0.733- 0.634- 0.857), which are significant effect sizes.

To test the validity of the second hypothesis, which stated that:

"There is a statistically significance correlation at the level (0.05) between each of the development of the cognitive aspect and the performance aspect of the level of perseverance of the prep school's first grade students".

To verify this hypothesis, the researcher used the Pearson correlation to know the strength and direction of the correlation between the variable, where the correlation value was calculated between the scores of the research group, the cognitive side and the performance side of the perseverance skill, and it came equal to the order: 0.726, 0.783, which are statistically significance values at the level (0.01). This indicates that there is a statistically significance correlation between improving the cognitive side and the performance side of the perseverance skill of the prep school's first grade students.

Interpretation of research results:

The improvement in the perseverance skill by using the services of the micro-learning environments in the research group can be attributed to:

- Advantages of the micro-learning environment, where the micro-learning environment is characterized by a set of advantages and capabilities that contributed in achieving the learning goals successfully, as the environment was characterized by ease of use, as it does not require complex technical skills, it is sufficient for the learner to know how to register and navigate within the environment and perform activities and upload them through E-mail.
- Answering questions, this removed fear and anxiety from using the educational environment and the electronic micro learning environment provides a good educational environment that helps provide a safe psychological atmosphere between the teacher and the learners. This

contributes to providing freedom of opinion and expression, asking questions and discussion, and thus removing the barrier of shyness among learners.

- The micro-learning environment allows for a variety of sources of providing content to learners. This helped attract learners' attention to the content, and provided greater opportunities for learning through the use of more than one sense at a time.
- The electronic micro-learning environment was based on several theories whose principles greatly affect the learning outcomes. These theories included; **Social Constructivist Theory**: whose principles emphasize the importance of a relationship between the teacher and the learners, encourage dialogue, and allow discussion between learners and their peers as well as the teacher, within the framework of collaborative work. This principle is the main feature of electronic micro-learning environments, as it provides an educational environment that combines the advantages of social networking sites with learning management systems, **Communication Theory**: which confirms that mastery and access to modern knowledge are the goal of learning; Therefore, the novelty of the learning content provided to the research group to develop the required knowledge and skills led to an increase in suspense and attracting the attention and focus of the learners to absorb the content, and this was shown through their behaviors and interactions by asking more questions and queries, and the continuous follow-up and continuous reinforcement by the researcher and giving feedback had positive impact in improving the level of perseverance.
- The result of the research agrees with the results of the studies that aimed to use the electronic micro learning environment in improving the various cognitive aspects of the members of the research group, including the study of: (Dina Mohamed, 2018; Basma Ibrahim, 2018; and Shaimaa Al-Saeed, 2018; Ahmed Sadiq and Asim Mohamed, 2018; Nader Saeed, 2015; Manawer El-

Mutiri, 2015), which demonstrated the importance of electronic learning environments in the learning process and their applicability to improving the level of perseverance.

Research Recommendations:

1. Approval of the research by the Ministry of Education and Al-Azhar Institutes Sector as an integrated educational program for the prep school's first grade students in both; Ministry of Education and Al-Azhar.
2. Constant interest in developing the skill of perseverance among learners by including courses for preparing learners in educational institutions for perseverance.
3. Holding training workshops and lectures, and preparing guides aiming at acquiring / developing the skill of perseverance in its dimensions among the learners.

Suggestions for further studies:

1. Preparing a study that aims at the effectiveness of a micro-learning environment in developing other dependent variables such as critical thinking skills using mind maps for the prep school's first grade students.
2. Preparing a study that aims at detecting the steps of Al-Azhar Al-Sharif's teachers and students towards the use of micro learning environments.

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