DESIGN CRITERIA FOR ACTIVITIES IN A MICRO-LEARNING ENVIRONMENT

Heba Mohamed shawky

Ict teacher in we minia school

Dr. Mohammed Ibrahim El desoky

Professor of Instructional Technology faculty of Education ,Helwan University

Dr. Mamdouh Abd el hameed Ibrahim

Ass.prof of Instructional Technology faculty of Specific Education ,Minia University
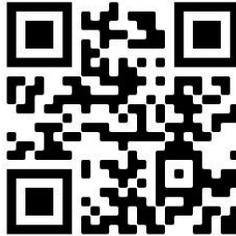
Abstract:

The role of Instructional technology in improving and developing the Instructional curriculum in the current period and presenting it more effectively to achieve the targeted learning outcomes and to provide a graduate with competence to keep pace with the global labor market has been evident. The developers and designers of e-learning sought to find modern Instructional strategies that would be more popular with learners from the millennium generation Previous research has determined that the millennial generation of university students requires modern methods of education.

This generation needs education that relies on short instant messaging, interaction, and group activities. They are consumers of digital content largely because of their high technological skills. They are a generation where technology has been deeply integrated into their daily lives. Instructional activities are a prominent element and partner in the Instructional process, and accordingly, many patterns and special models were constructed that enjoy the placement of Instructional activities in a unique position in the learning process, including the two patterns of practice (individual - cooperative) and the two patterns of practice (distributed - focused).

It is unlike traditional activities as it can be integrated into the learner's activities and daily routine, thus reducing the student's intellectual burden or the so-called (Cognitive Load) on the learners. Therefore, choosing the elements of this type of mini-activity, in addition to the factors of timing and synchronization, is of great importance in Modern learning design.

Therefore, the current study sheds light on some standards for designing activities in the micro-learning environment, including standards for the technical and technological field, Instructional standards, standards for the teacher, and standards for the learner.

Keywords: Instructional activities, micro-learning environments.

Introduction

The micro-learning technology is a qualitative Instructional leap and a major shift in the field of e-learning as it avoids the

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need for separate Instructional sessions because the learning process is integrated into the daily routine of the user on the other side and also corresponds and fits very effectively with the phenomenon of the spread of mobile smart devices that cannot be accommodated Lengthy and detailed lectures (Ibrahim, 2018)Modern micro-learning statistics came to indicate a very noticeable rise in its use and predict the continuation of a high rate of use in the coming years. It is one of the most important new strategies and directions for education in the future, through which small learning units are made that are easily accessible to acquire one skill in each Instructional element.

(Hug et al., 2006) ,(Ferriman, 2016), (Shinde, 2019), (Nikou & Economides, 2018) Has known microlearning :

Micro-learning is defined as small learning units and focused short-term activities of no less than (3-5 minutes) for skill-based learning. The content is in multiple forms, including text, images, videos, flash cards, and animations. It presents a series of small lessons directed at one Instructional goal. And every single lesson = one skill.

Micro-learning is a model that can be combined with daily activities, taking into account the needs of the generation of smart devices.

Instructional activities are a major component of micro-learning. (Muhammad bin Khalfan Al-Shidi, 2008), (Iman Ali, Hanan Muhammad, 2008), (Ibrahim Youssef, Abdel-Hamid Amer, 2011) , (Andrew & Parry, 2015),(Iman Zaki,2021).

A set of tasks that the learner performs through his mental or physical effort, and each activity has a specific goal, and it may be individual to reveal his inclinations and abilities, or cooperative to exchange ideas and experiences, which helps to acquire various skills and complementary experiences to previous experiences, which is the basic foundation for learning thumbnail The student is required to carry out learning activities that are specific to evaluating his understanding of the Instructional unit and help him to be able to pass it. In the case of the unit containing special skills, the student is required to do activities to evaluate the skillful part of the unit through activities and skills. The activities may be individual or cooperative.

From the foregoing, the researcher concluded that most of these studies have focused on one part of the topic, which is the effect of using mobile learning devices in improving the education process. Other studies dealt with enhancing the Instructional process and enhancing students' learning. It is noted here that the current study conducted by the researcher is consistent with previous studies in terms of its handling of mobile learning, and its treatment of standards for designing a mobile learning environment used in the teaching and learning process, but it differs in that it will deal with the standards in detail and will provide a tool for evaluating any learning environment that is transmitted.

Research problem:

Recently, we notice the increasing use of mobile learning in education due to its many advantages and capabilities, and due to the recent technological developments in this field, which have opened many doors for specialists to advance the Instructional process.

We also find that the employment and use of mobile learning in the Instructional process is constantly increasing and that it can be effective in solving many Instructional problems if it is well designed and used, but there are no fixed standards that raise its efficiency and effectiveness.

As the mobile learning environments are one of the new technological innovations that appeared on the Instructional scene and are characterized by their ability to achieve many Instructional goals in addition to having become a tangible reality that helped spread the tremendous development in technology systems that many people of the country possess, so the need to study them has become an issue.

It is urgent to get acquainted with its concept, tools, Instructional benefits, its relationship to e-learning evidence, its classifications, the challenges it faces, and finally its standards so that it can be developed on scientific bases commensurate with the importance of the role that these environments must play, making it an Instructional entity through which the difficulties facing traditional learning evidence can be overcome As well as electronic.

Through the researcher's review of previous research and studies, it became clear that most of them focused on the effectiveness of micro-learning in the Instructional process in general, and this research did not address general and specific criteria for designing activities in a micro-learning environment microlearning.

Research questions:

After formulating the problem, the researcher formulated the main question of the research as follows: What are the criteria for designing activities in the micro-learning environment?

The following sub-questions branch out from the main question

1. What are the sources of Instructional design standards that must be taken into account when designing activities in a micro-learning environment?

2. What are the technical design criteria that must be taken into account when designing activities in the learning environment?

Research aims:

1. Finding a list of Instructional, technical and specialized design criteria that must be taken into account when designing learning activities in a micro-learning environment.

Research Methodology:

The current research follows the descriptive analytical research method for technology research.

Research steps: The research followed the following steps: **First:** Preparing the theoretical framework for the research by examining the Instructional literature represented in education technology books, and previous research related to the subject of the research.

Second: Presentation of female writers and previous studies and research related to the standards of activities in the micro-learning environment.

Third: Conducting the field study by applying the following: 1] Preparing a list of criteria for designing activities in the micro-learning environment by: Collecting the extracted criteria and logically classifying them: Develop indicators for each criterion. Preparing the initial version of the list of criteria and presenting it to the arbitrators as an exploratory sample: Presenting the initial

list to a sample of professors and specialists in Instructional technology and curricula

Research importance:

1] Opening the door for researchers to apply micro-learning or integrate it into e-learning

2] Directing the attention of researchers interested in the field of Instructional technology to conduct studies and research on the design of micro-learning environments using Instructional, technical and technological standards to design activities in the micro-learning environment.

Search limits:

The current research is limited to deriving the criteria and the evaluation tool from studies, research and related literature that could be obtained and then presented to a sample of professors and specialists in the field.

Search terms:

Micro learning: The researcher defines it as procedural Micro-learning: it is small learning units and focused activities in the short term of not less than (3-5 minutes) for skill-based learning, and the content is in multiple forms, including texts, pictures, videos, flash cards, and animations, and it presents a series of small guided lessons. For one Instructional goal and every single lesson = one skill, Micro-learning is a model that can be integrated with daily activities, taking into account the needs of the generation of smart devices.

E-learning activities: Geely Salmon (2003:207) launched On E-activities, which are digital interactive learning activities that take place via a computer screen or using a technological innovation. The researcher defines the electronic activities procedurally in accordance with the subject of the study as interactive activities that are practiced using techniques that are appropriate to the characteristics of the learners, directing the learner and giving him appropriate feedback.

Theoretical framework and previous studies:

1-: Micro-learning: Micro Learning seeks to support and enhance learning and learners, by promoting continuous learning and developing human capital as a main axis in raising the efficiency and quality of graduates and providing them with the skills and

knowledge required to perform new tasks in the future and to link education outcomes and their suitability for the labor market, and achieve the vision and special goals With Instructional institutions and easily engaging in the digital workforce required by the 21st century.

(Shruti Shinde, 2019), (Justin Ferriman, 2016),(Theo Hug, Peter A. Bruck ,2006), Martin Lindner); (Anastasios Economides, 2018),(Stavros Nikou, 2018)
 Define microlearning as:

Small learning units and short-term focused activities of no less than (3-5 minutes) for skill-based learning. The content is in multiple formats, including text, images, videos, flash cards, and animations. It presents a series of small lessons directed to one Instructional objective and each lesson is one. = one skill, so micro-learning is a model that can be combined with daily activities, taking into account the needs of the generation of smart devices.

2- the importance of micro-learning:
 (School, 2021), (Greany, 2018) mentioned that the importance of micro-learning can be summarized as follows:

1- **More efficient**: Microlearning theory is based on a concept by German psychologist Hermann Ebbinghaus and his experiments on human memory. Ebbinghaus pioneered the "forgetting curve" which shows how much information the brain can hold over time, and how quickly people forget new knowledge they have acquired.

 According to the Ebbinghaus Forgetting Curve, people retain only 21% of what they have learned in a month, and micro-learning offers a solution to this by adopting a "little and frequent" approach.

 Learners are more likely to retain information if it is broken down into understandable pieces that they can revisit. Regular and micro-learning units are targeted, accurate and designed to cover all key information Shift Learning has found that knowledge transfer is 17% more effective when we use precision learning Findings from RPS Research indicate that microlearning enhances long-term retention by up to 80%. In this way, it can be

used as a stand-alone method of teaching delivery or as a supplement to the main learning method to reinforce the key information that has been learned.

2- Microlearning reduces development costs while improving development speed:

Due to their virtual nature, micro-learning courses are a more cost-effective way to deliver education with e-learning videos, for example, eliminating the need to hire an instructor, rent a classroom, or purchase equipment as we expect to invest more money in micro-learning, emphasized Eng. Learning Dr. Ray Jimenez, author of "3-Minute E-Learning" reports that microlearning can cut development expenditures by 50%. Not only that, but thanks to its efficiency, micro-learning can also increase development speed by up to 300%, making it a win-win solution.

3- Microlearning supports just-in-time learning:

Just-in-time learning allows learners to access the information they need when and how they need It has become increasingly popular with both learners and learning and development professionals thanks to its flexible delivery methods By combining micro-learning with this approach, educators responsible for learning and development will be able to create A digital infrastructure of small scale modules that can be accessed from anywhere, enabling control over the development of learning modules.

4- It is compatible with smart devices:

In a world where people check their smartphones 9 times an hour, and the competition for attention is now fierce, it's no wonder that shorter digital learning content is becoming more popular as we move towards digitization in almost all aspects of our lives and adapt to the new way of working necessitated by the coronavirus pandemic. Mobile flexibility and the ability to get things done on the go is becoming increasingly attractive to learners and this is partly due to our exposure to short, accessible forms of media such as videos, infographics, and more.

5- Preferred by both learners, learning and development professionals:

The Shift Learning survey showed that more than 50% of respondents would engage more in learning if courses were shorter and faster with 94% of learning and development professionals saying they also prefer microlearning over long e-learning courses, This means we can expect to see a significant increase in the number of courses Micro-education displayed in the future.

3- The advantages of micro-learning:

There are many studies and literature that dealt with the advantages of micro-learning, which were agreed upon by (Job & Ogalo, 2012), (Jomah, Masoud, Kishore, & Aurelia, 2016); (Omer, 2017),(Magda Lehnert, 2021) The advantages of micro-learning are the following:

1-   Speed in production and consumption: Faster production of education content in a shorter time, and it takes less time to learn and understand the content.

2- Less expensive: It requires fewer resources and needs the least number of trainers.

3- Flexibility: Micro-learning courses can cover any topic that e-learning can cover

4- Attractiveness: Micro-learning is the most attractive method of education, as it approaches the use of social networking applications.

5- Supports mobile learning: It depends on small learning sessions that are available at any time and place on smart devices.

6-   It enhances knowledge retention: it allows the learner to focus on one idea or concept and provides small, self-contained units that facilitate return to them.

7- It gives more freedom to learners: It allows learners to choose their own course in the time available to them and at any time.

    8- Easy to develop and update: It is easy to update and develop the Micro-learning units in an easier and faster way.

2- Instructional activities:

Instructional activities are a major component of micro-learning. (Muhammad bin Khalfan Al-Shidi, 2008), (Iman Ali,

Hanan Muhammad, 2008), (Ibrahim Youssef, Abdel-Hamid Amer, 2011) and 2019 (Behzad & et.al) , (Andrew & Parry, 2015, p.5) A set of tasks that the learner performs through his mental or physical effort, and each activity has a specific goal, and it may be individual to reveal his inclinations and abilities, or cooperative to exchange ideas and experiences, which helps to acquire various skills and complementary experiences to previous experiences, which is the basic foundation for micro-learning .

Muhammad Khamis (2020) defined mini-Instructional activities as activities carried out by the learner during the learning process, and a mini-Instructional activity is a short Instructional activity for a mini-Instructional unit carried out by learners while working on the mini-content to obtain the required Instructional experiences and emphasizes that Instructional activities in Micro-learning It aims to practice learning, stimulate motivation, challenge and support learning effectiveness.

Types of Instructional activities:

1- Individual activity pattern:- In this style, the learner performs the activity on his own, relying on himself to accomplish the task entrusted to him according to his ability and his own step, and he is responsible for achieving the Instructional goals specified by himself and developing them to reach the maximum of his energies and capabilities to reach the level of mastery. (Osama Hindawy, 2014); (Charles, C, 2014; Karla, D, 2013); (Kirschner, al et, 2009); (Chang & Chen, 2016); (Fahriza, al, et, 2019)

2- The pattern of practicing cooperative activities:

The activity in this style is based on cooperation between a disparate group of students who work together in a positive and interactive way, where experiences and skills are exchanged to achieve their common goals for the Instructional task assigned to them in an Instructional situation, which leads to improvement and revitalization of learners' ideas, building new knowledge and applying it in new and different Instructional situations. A learner has an essential role in the group, without which learning is not complete.

(On the Mayor, 2013); (Emad Khairy, 2011); (Kirschner, al, et, 2009); (Khamis Muhammad Attia, 2009), (Harasim, L, 2002); (Parry, A., 2012; S., et al., Penny, 2007)

2- Principles of designing Micro-learning activities:

The current research concluded from (Chu, H.-C., 2014) and (Göschlberger, B. (2016,) some necessary foundations when designing micro-learning activities as shown in the following figure:

1- Focused and based on a specific goal: the activities are goal specific and focus on achieving its results.

2 - Reduce the learner's mental effort: the activities reduce the mental effort exerted by practicing and applying a skill after each mini-unit.

3 - Help to remember and pay attention: the activities must help the learner pay attention to the Instructional content and remind him of what he brought with his direct application of the tasks and activity.

4- Improve working memory efficiency: Activities reduce the amount of information being processed synchronously inside the memory thus improving its efficiency.

5- Taking into account the individual differences among the learners: The activities take into account the individual differences among the learners in terms of speed, performance, inclinations, and attitudes.

6- Motivate the learner and reveal his abilities and inclinations: the activities stimulate the learner to understand the content and apply the tasks that reveal his abilities and inclinations.

Search procedures:

Preparing a list of standards for Instructional activities in the micro-learning environment

Determine the target from the list of criteria:

The general objective is to reach a list of a set of Instructional and technological standards for Instructional activities in the micro-learning environment.

Determine the sources of derivation of the list of criteria:

Several sources were referred to when building the list, namely:

Analysis of literature and previous studies that dealt with the micro-learning environment and Instructional and technical standards for the design and production of e-learning activities and examining and analyzing the standards they included as a study.

Based on mobile learning on some Arab and foreign literature, studies and research, as well as the opinions of experts and specialists in the field of Instructional technology with regard to standards for designing Instructional activities in a micro-learning environment and the results of research recommendations, previous studies and relevant conferences, including Muhammad Khamis (2013) and Stephanie Trowbridge, Clair Waterbury, els (2017) and in light of this, the list was built, the opinions of some professors in the field of Instructional technology.

Preparing the default form for the criteria list:

Through the previous sources, the standards were formulated in their initial form in the form of phrases, each of which represents a prerequisite that should be available when producing Instructional activities in the micro-learning environment.

Presentation of the list of criteria to the arbitrators:

The initial image of the list was presented to a group of arbitrators specialized in the field of curricula, teaching methods and Instructional technology.

Making the necessary amendments in the light of the opinions of the arbitrators: The amendments were made in the light of the opinions of the arbitrators in terms of adding some necessary criteria and deleting the criteria that cannot be observed and measured, and merging some criteria that perform the same task(1).

Search recommendations:

1- Adopt the standard levels that were used in the current research to be a guiding model for designing activities in micro-learning environments

2- Carrying out further reviews of these standards, in order to keep pace with recent technological developments in the field.

3- Organizing training courses for university faculty members to train them on the use of micro-learning in building successful courses.

4- Including in the curricula of Instructional colleges detailed topics on micro-learning and training students to use it, so that they can benefit from it during practical education and when they are assigned to schools.

 Suggested research:

1- Conducting studies on standards for designing and publishing courses through mobile learning environments .

2- Studying the impact of different types of activities within micro-learning environments on learning outcomes.

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المعيار الأول : التربوي		
ع.م1	مراعاة خصائص المتعلمين عند تصميم الأنشطة ببيئة التعلم المصغر	
المؤشرات	1-تحديد الخصائص العمرية والعقلية للفئة المستهدفة.	
	1- تحديد اهتمامات الفئة المستهدفة.	
	2- مراعاة الفروق الفردية للمتعلمين.	
	4-مراعاة استخدام وسائل ووسائط متعددة للتعلم لتناسب كافة المتعلمين دافعيتهم واهتمامهم	
ع.م2	وضوح الأهداف التعليمية للأنشطة التعليمية	
المؤشرات	1- تحديد الأهداف العامة للنشاط بدقة .	
	2- تحديد الأهداف الرئيسية والفرعية من النشاط.	
	3- صياغة الأهداف التعليمية بأسلوب اجرائى سلوكى صحيح.	
	4- تكتب الأهداف بوضوح وسهولة للتلميذ ليسهل عليه تحقيقها.	
	5- تركز الأهداف التعليمية علي الارتقاء بالمهارات العملية لكل متعلم.	
	6- وضع الأهداف التعليمية المطلوب تحقيقها مع كل نشاط	
	7- يكون لكل نشاط هدف تعليمى واحد واضح ويساهم في تحقيق باقى الأهداف العامة.	
	8-الهدف قابل للتطبيق من قبل الطلاب	
	9- الهدف قابل للملاحظة والقياس.	
	10- تنظيم عرض الأنشطة التعليمية وفق تحقق كل هدف.	
ع.3	**تصميم لشاشات واجهة الاستخدام الأنشطة التعليمية**	

المؤشرات:	تصميم شاشات الأنشطة بشكل سهل وسلس للغاية وتوفر تعليمات واضحة ومفصلة للنشاط.
	2- تصميم واجهة الاستخدام بشكل يتصف بالاتزان من حيث توزيع العناصر.
	3- استخدام لغة لفظية بسيطة ومباشرة تتناسب مع الفئة المستهدفة.
	4- تحديد ووصف السلوك المطلوب من المتعلم وتقديم كل التعليمات والمعلومات لتحقيق النشاط المطلوب .
ع.م.4	**ثبات واجهة الاستخدام داخل برنامج الأنشطة التعليمية**
المؤشرات:	1- مراعاة استخدام معايير قياسية موحدة في تصميم كافة الأنشطة كنوع، وحجم، ولون الخط.
	2 - تصميم شاشات ذات نمط واحد لكل الأنشطة داخل البرنامج.
	3 -توحيد لون خلفية الشاشة في جميع الاطارات.
ع.م.5	**انماط التفاعل داخل الأنشطة التعليمية**
المؤشرات:	1- تقديم أنشطة تعليمية تقوم على تفاعل المتعلم وإيجابية عند ممارسة كل نشاط.
	2- توفير طرق إتاحة مختلفة لتفاعل المتعلم مع الأنشطة مثل: (الفأرة، لوحة المفاتيح)
	3- التواصل الدائم أثناء تطبيق المهام والنشاط مما يذيد من دافعية المتعلم نحو تعلمه ويقوى لديه الاستجابات الصحيحة ويضمن تنفيذ المهام المطلوبة باتقان
	3- توفير ردود فعل فورية على أداء الطلاب لتحفيزهم ومساعدتهم على تحسين أدائهم .
	4- تقديم أنشطة تعليمية تقوم على تفاعل المتعلم وإيجابية عند ممارسة كل نشاط.
	5- المرونة في القيام بالأنشطة في أي وقت حسب ظروف المتعلم الخاصة والوقت المتاح لديه.
ع.م.6	**تقديم تغذية راجعة للأنشطة التعليمية**
المؤشرات:	1- تقديم تغذية راجعة تتناسب مع استجابة المتعلم سواء كانت صحيحة أم خاطئة.
	2- تقديم انماط متنوعة من التغذية الراجعة
	3- تقديم تغذية راجعة توجيهية في حالة الاستجابة الخاطئة.
	4- تقديم التقييم الفعال لأداء الطلاب وإتاحة فرصة لتقييم أدائهم وتحسينه.

	5- تقديم تغذية راجعة تشجيعية في حالة الاستجابة الصحيحة.
	6- تقديم الدعم الفني للطلاب لحل أي مشكلات في التقنية وتوفير المساعدة الدائمة .
7م.ع	معايير خاصة بتصميم الأنشطة التعليمية الفردية
المؤشرات:	1- تنمى الأنشطة اتجاهات المتعلم الإيجابية تجاه نفسه وتجاه مجتمعه
	2- تنمى الأنشطة هوية المتعلم الذاتية ومهارات التفكير لديه واتخاذ القرار
	3- تنمى الأنشطة لدى المتعلم الاستقلال في التفكير والعمل وتحقيق الذات
	4- المتعلم هو المسئول عن تعلمه وانجازه للنشاط مما يذيد من ثقتهفى قدراته على تحقيق الأهداف المحددة
8م.ع	معايير خاصة بتصميم الأنشطة التعليمية التعاونية
	1- يقسم المتعلمين لمجموعات لا تذيد عن خمسة أفراد وتكون متنوعة الاهتمامات والقدرات الفردية والميول لاتمام النشاط
	2- يتم التواصل والتعاون الدائم بين أفرد المجموعة لانجاز المهمة والوصول لدرجة الاتقان.
	3- تقديم وصف دقيق للنشاط وتقسيم المهام وتحدد الأدوار لكل فرد في المجموعة لانجاز النشاط والمهام الخاصة به .
	4- النشاط يمكن تقسيمه لمهام صغيرة وتخلق مجال للابتكار والابداع لكل فرد في المجموعة
	5- يقدم المتعلمين تغذية راجعة فيما بينهم حيث يقوم كل فرد بتقييم تعلمه وتقييم عمل اقرانه في المجموعة .
	6- يتم تقويم عمل المجموعة ككل وعمل الفرد مستقل والتعرف على أعمال الفرد التي ساعدت في انجاز النشاط

ملحق (1) قائمة معايير الأنشطة التعليمية ببيئة التعلم المصغر