Proposing Micro-Learning in Saudi Universities

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Abstract

This paper proposes using micro-learning at Saudi universities. It commences with an account of the concept of micro-learning and the difference between micro-learning and electronic learning. Then it touches on the significance, principles, and examples of micro-learning, followed by some micro-learning applications and pitfalls. The paper closes with a proposal for using this learning mode at Saudi universities.

Keywords:

Electronic learning, Micro-learning, ML-based Apps, Saudi Universities

What is micro-learning?

First and foremost, the difference between micro-teaching and micro-learning (ML), which may be confusing, should be clarified. Teaching or micro-teaching can be defined as a method of teacher training. It represents a micro-picture of the lesson or part of its parts or one of the skills it undertakes, under controlled conditions, presented to a limited number of learners or trained teachers [1]. On the other hand, micro-learning is briefly defined as a process in which learning takes place through well-planned, understandable small units. It is also defined as a process that comprises short and sequential learning activities, i.e. learning by interaction with units of mini-educational content in short time frames [2]. According to [2], micro-learning is getting electronic learning through simple amounts that look like small bites easily digestible and absorbed within a short time, compared to the large quantities required for school learning.

Based on these two definitions, some points about micro-learning can be pinpointed:
• In micro-learning, the scientific material is divided into small units to facilitate

learning.
• That these small units are sequential.
• The time allotted for these units is short to facilitate understanding it.
• This type of learning is helpful to traditional learning in schools and may help

students develop or clarify what is difficult for them.

Micro-learning vs. electronic learning

Micro-learning	Electronic learning
It present knowledge briefly	It present knowledge elaborately
short duration	Long duration
3-5 minutes	20-30 minutes
It is suitable for smart device	It is somehow suitable for smart device
It is easy to use on social platforms	It is difficult to use on social platforms
It fits busy lifestyle	It does not fit busy lifestyle

Features of Micro-learning

Bites-like content is the required amount that suits the rich environment of information. It enables learners to access small information pieces instantly, anytime and anywhere. Micro-learning, which is concerned with communicating information or specific or part of it is the most appropriate learning for students who are difficult to draw their attention given the distracting factors. For this reason, students need rich and focused information. At the same time, the information should be organized and meaningful for their work and daily practices. Drawing on [2], the following reasons rationalize micro-learning.

• **Micro-learning engages learners**

– Micro-learning is a logical and natural extension of Macro-media such as Twitter and Tumblr, which rely more on basic facts and relevant information than looks.
– Micro-learning helps learners overcome boredom as it involves interactive elements: Scores, games, quizzes, and graphs for a quick presentation and easier understanding, among others.
– Micro-learning is mainly focused on short, focused sessions (less than 7 minutes in most) to avoid mental exhaustion and fit the brain and stimulate it to alertness.

- **Micro-learning enables students retain information**

– Short-term memory allows the transfer of about 4-5 units of knowledge at a time. Micro-learning can expand it by segmenting the content and transforming it into parts easily integrated into human long-term memory.

– The human brain changes throughout the life cycle according to the experiences it is exposed to. The more the brain exercises its mental functions, the more its structure changes and develops.

– Undoubtedly, micro-learning contributes to international experiences and practices.

- **Micro-learning helps students practice**

– Micro-learning is easy to implement because it is designed to fit the participants' schedules. It does not require travel or discontinuing normal work activities.

– Depending on experience level and need, participants can define their courses, facilitating a unique and personalized learning journey.

Importance of Micro-learning

Micro-learning is important because it is a new method to convey specific information and skills by dividing sizable content into segments. Each segment has one idea, the purpose of which is to achieve one goal easily. This contributes to delivering accurate ideas specific to students. This can facilitate the delivery of complex ideas and lengthy contents sequentially after fragmentation and simplification. This way helps to understand the total content and understanding complex ideas, which reduces the cognitive burden on students. This helps learners obtain better and more accessible learning and easier. This has an echo in [4] that indicated the superiority of the first experimental group in the achievement test. This outperformance resulted from the use of introductory micro-learning units, which reduced the cognitive burden of the members of the group and their superiority.

Moreover, micro-learning helps learners save time as it can be used to explain and clarify specific parts of the lesson or the skills deemed difficult for students by allowing students to see the point or the part that is difficult for them. That is to say, learners do not need to go back to see all the other parts they understand well when revising the parts in focus.

Micro-learning can also help facilitate learning skills by presenting the selected skill the students want to learn in a focused manner. It enables students to view the content of the required skill until they master the skill in focus. Some studies, e.g. [5], indicated this advantage. For instance, [5] pointed out the development of the technical skills required

of the learners under trial according to the learning strategy of mini-courses. In a similar vein, [6] recommended using segmented video clips when designing digital video because of this effective role in maintaining students' focus and increasing their skills related to designing the educational video. [7] concluded that micro-learning contributes to the developing programing skills of the learners and increases their motivation towards learning. It also indicated the role of micro-learning in increasing students' motivation towards learning.

Effective principles of micro-learning

[2] outlined some micro-learning principles that should be considered.

- Short duration:
Micro-learning depends on short-term instruction. Some lessons
are only a few seconds long.

- Small units:
Micro-learning is based on small units that support learning task. It reduces complexity. It is self-explanatory, self-contained, independent yet still serves as a larger unit.
3. Use of story:
As the content in micro-learning shrinks into smaller units, learning contexts become more important. The story is an appropriate way to contextualize learning. It does not need to be long and can be told using a single image or a few words.

- Repetition:
Micro-learning allows focusing on the more difficult parts and then less essential items that could be covered quickly through repetition.

- Comprehensiveness:
Dividing content into small pieces aims to provide an integrative presentation of the topic to deepen understanding in diversified and meaningful ways. The overall content is well suited for teaching digital and other skills. Quite often, there are more than one way to get results.

- Rapid creation:
Training platforms regenerate regularly. Hence, any learning mode that needs to be built quickly to ensure its effectiveness can easily create unique educational materials through LMS or CMS.

Examples of Micro-learning

[2] mentioned some examples of micro-learning. The author indicated that this learning type may take the form of reading a paragraph of a longer text or listening to a podcast,

an educational video, or sorting a group of (micro-content) items by logical order, for example, chronological order, or choosing an answer a question.

[2] also mentioned some more examples; e.g. the TED X series concerned with spreading worthy ideas in various fields, including technology and design, and the Khan Academy which is often cited as a micro-learning model.

[3] provided some examples of micro-learning, including watching short educational YouTube clips, learning by using cards (e.g., applications) that provide its users small cards containing small content (e.g., some foreign words to learn a new language), periodically receiving some simple information by e-mail to learn a specific skill or learn a specific language.

Some Micro-learning Applications

- Word of the Day
  – This application increases students' vocabulary for the language he or she wants to learn. The application teaches one word per day.
  – At the end of each period, students can write a small essay using the words they learned during a specific period.

- Duoling
  – This program is designed for learning foreign languages.
  – Through this App, students can learn 21 different languages.
  – It is possible to start by adding a daily objective, which takes 5-20 minutes.
  – The users can determine their level – a beginner or an advanced level.
  – The program focuses on words and their translation.

- InstaNerd
  – It is a website that provides a fun way to simply learn facts.
  – These facts and information can be shared through social media.
  – Students can learn information not required to be part of the curriculum but contributes to their learning and provides them with helpful information. However, several Apps or sites can be exploited in micro-learning.

- ExplainEveryThing
  – This website provides explanations of 5 minutes or so for each clip.
  – Users can make a presentation and record everything he or she writes or draws.
  – Users can create explanatory and educational videos and send them to students.

- BookWidgets
  – It enables users can add multiple mini-lessons.
  – It enables users to discover each step individually.
  – It enables users to add YouTube clips or puzzle games.

Drawbacks of micro-learning:

[8] pointed out some shortcomings that related to micro-learning, including the following:
1. It is not suitable for complex tasks or skills.
2. Its material can become easily fragmented.
3. It does not help achieve long-term performance goals.

Micro-learning in Saudi universities

Integration of Micro-learning technology can support the existing electronic learning management systems (LMS) used by the Saudi universities. It can also be designed and integrated as independent activities supporting the educational content available through the LMS systems. Hence, activating and following this type of learning aligns with the plans and initiatives of the Ministry of Education for the year 2030 that intends to shift digital learning. It is easy to activate this type of technology if considering the increasing societal trend towards the use of smart devices and the omnipresence of handheld devices and their various applications. This would support the transition to digital learning, which is in line with the policies and plans of the Ministry for national transformation [9].

Specialized courses on designing educational lessons can also be organized on micro-learning. Such specialized courses could be organized to prepare ML-based educational videos, segment them, and introduce the prepared clips, taking into account the effective principles of micro-learning - the short duration of the videos, bite-sized content, comprehensiveness, and the possibility of clip quick preparation.

Database for each university may be set up to uphold ML-based videos and give them unified titles, facilitating clips and educational experiences exchange. It also saves learners time searching for a particular molecule that is unclear or understood. A learner can understand this part more quickly in more than one explanation from different faculty members. The database can also help faculty members benefit from each other by exchanging experiences and quickly understanding particles that are not clear to some of them.

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