Micro-Learning: A new dimension to learning

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Abstract- One of the best and most frequent approaches for the 21st century for learners is Micro-learning. Micro-learning is the most interesting way of teaching and learning the content in a small and specific way. It refers to short forms of learning and consists of short, fine-grained, inter-connected and loosely-coupled learning activities with micro-content. Content, time, curriculum, process, modality, and learning type are some of the dimensions of Micro- learning. The problem with learning system today is that the learners often get stuck while using traditional learning systems as it lacks creative learning. Moreover, the learner remain static and is unable to improve his skills. Micro-learning technique is new teaching mechanism, the information is divided into small chunks and is delivered to learners and is different from e-learning. This paper discusses the concept of Micro-learning and micro-content. The paper describes key principles of micro-learning design and illustrates how Micro-learning can help bridge the gap between formal and informal learning. This paper reviews the main three elements in creating an effective micro-learning environments and highlights that content, pedagogy and technology are the main components in micro-learning.

Keywords- Learning; e-learning; Micro-learning; Micro-content techniques.

I. INTRODUCTION

With the world's continuous demand and complexity, increasing learning competence is crucial. Micro-learning is a new research area aimed at exploring new ways of responding to the growing need of lifelong learning or learning on demand for the learners. It is a new teaching method with no specific definition yet, strictly related to e-Learning. Micro-learning is more interesting due to its way of teaching and learning the content in a small, very specific bursts. Micro-learning refers to any pedagogy that encourages learning in short segments. It is the process of getting the e-learning in to small doses, as tiny materials that can be comprehended in short time [1]. Micro-learning is micro-content in the form of the digital information limited by a software or device [2]. It involves small content rather than the deep concepts. It offers new ways of learning and designing the content in to small steps with the structure and classification used by the learner [3].
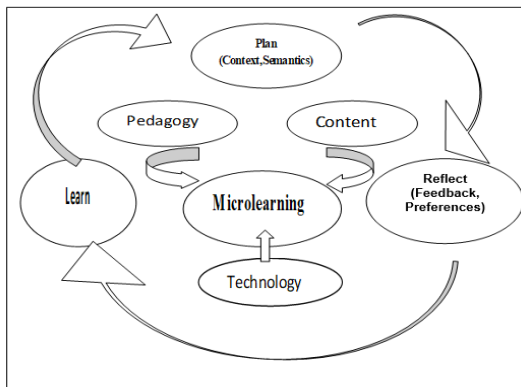

Fig. 1. Micro-learning model

II. PRINCIPLES OF MICRO-LEARNING

Micro Learning is not just putting pages of classroom training, but the main goal is finding the application points and increases the work efficiency. The two main aspects of micro learning are design of Micro-content and design of Micro-learning activities. The basics principles of Micro-learning are [4]:-

1. Format: Micro content should be designed as small units enabling immediate perception, e.g. information presented on the computer screen should be easily scanned at a glance without the need to scroll down.

2. Focus- Micro content should be clearly focused to express a particular topic or an idea in the sense of a proposition, expressing what the message is about. E.g. are e-learning methods.

3. Comprehensed: Micro content should to be comprehensible to learners without any search to get additional external information. Therefore special attention required to pay to context and background knowledge when structuring micro content units.

4. Structured: Micro content should be structured in a way that they comprise at least such elements as title, topic, author, date, tag, URL.

5. Direct Reference: Micro content should be designed with a possibility of direct reference by a URL, such as permalink.

III. MICRO-LEARNING APPROACHES

Three keys elements for creating an effective micro-learning environments are Content, Pedagogy and Technology

➤ **MICRO-CONTENT**

Micro-content refers to information which is targeted, authentically helpful, focused on useful, concise information

and responds to a specific question in a short period of time. It changes the type of information available on the Web towards small and shorter chunks of content, e.g. blog posts, wiki pages. The information is accessible through a single definitive URL or permalink, and is appropriately written and formatted for presentation in email clients, web browsers, or on handheld devices as needed. The four parameters which can be kept keys factors in creation of micro content are:

> Online learning self-efficacy
> Learner-content interaction
> Learner-instructor interaction
> Learner-learner interaction

Thus making micro-content an integral part of micro-learning[5].

> **PEDAGOGY**

This is clearly one of the key challenges for micro-learning, which seeks, in a variety of ways, to integrate learning into everyday life. Self-efficacy in learning online is very critical to students' learning. Traditional pedagogy, such as a one or two hour lecture, may seem increasingly old-fashioned as we step deeper into the information age. Several pedagogical strategies can be integrated to support microlearning, especially self-directed learning (e.g. Knowles, 1975), situated learning (e.g. Lae & Wenger, 1991), community-based learning (e.g. Wenger, 1991). Encouraging co-creation and sharing of content can be guided through principles of collaborative learning and by models of media design, such as process-oriented approaches to media creation and exchange [6]

> **TECHNOLOGY**

Technology plays an important role in Micro-learning.Micro-learning requires continuous improvements in I&C technology performance. The constantly decreasing cost of technology increases the affordability of Micro-learning over all different platforms including mobiles. It can be used to engage students outside of classroom if implemented well. The challenge with technology is that it is a fast-growing industry, sometimes it is hard for instructors to keep up along with all other teaching and non-teaching responsibilities. Knowledge of technology is often recorded to be the lowest compared to instructors' self-reported knowledge of content and pedagogy [6].

In micro-learning, it is important to think about appropriate choice of technology to design based on micro-learning characteristics. The most common micro-learning tools used today include Coursmos, Grovo, Yammer, Articulate Storyline ,4. Adobe Captivate (V9), iSpring[7].

IV. HOW MICRO LEARNING IS DIFFERENT FROM E-LEARNING?

Micro-learning is the emergence of the micro-content structures and it can be designed in form of e-learning. Micro-learning gives learners the ability to gather information in "bite-sized" forms, which can help them to absorb it much more effectively. On the other side,e-Learning is any form of learning that is delivered using electronic devices like the computer via channels like the Internet/Intranet/Extranet networks.

Table below explains the how micro-learning is better than e-learning.

Table 1: Difference Between Micro And E-Learning [8]

	Micro Learning	**E-learning**
Learning Context	Informal context	Formal and informal learning.
Time access	Dynamic and flexible structure created by learners	Provide any time access to course of the topic
Learning concept	read a book, discuss with peers, take an online class	Learning can be done by multiple media, so enhances learning
Learning Process	Micro learning is a learning process where learners and experts are present physically in same place at same time [9]	E-learning is the delivery of teaching material electronically with the added value of maintaining standards and quality without the limitation of a specific location
Learning methods	Clear learning object and instructions [10] from teachers	Automated topics and more on-line tests
Content aggregation and fragmentation	Micro content units are self-contained as they can be understood without any additional information; micro content cannot be divided into smaller pieces without the loss of meaning	learning objects usually need to be combined with other learning objects to enable full understanding; content can be easily split for re-use and restructuring.[11]
Content retrieval	Micro content has a unique URL (permalink), which make even small chunks of information retrievable	Courses or topics are retrievable through a unique URL, however single learning objects are not addressable
Learner participation	Focuses on social interactions between learners	Focuses on learner-content interactions

V. CONCLUSION

Micro-learning concept has become most popular learning technique as learning has been made in small and specific content format. Micro-learning techniques have improved the learning process. Learners get access to knowledge in small and specific units of contents. Micro-content and micro-learning enhanced by technology provides a viable solution to fast-paced and multitask-oriented patterns of learning, enabling learning in small steps and with small units of

content through social interaction. Moreover, research studies have revealed that including all elements of micro-learning (i.e. content, pedagogy, and technology) can increase student engagement, enhance student satisfaction, and positively impact the learning experience

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