Pedagogycenteredon Learner in E, M and P-Learning Continuum: Active and Situated Learning

Najima Daoudi and Rachida Ajoun

***Abstract*—Learning is one of the crucial fields of activity that have benefited from exponential technological development. D-learning has experienced three main generations: E-learning, M-learning and P-learning. Technology alone is not sufficient to create a higher quality of learning. In this sense, we propose to analyze and study two pedagogical approaches: active learning and situated learning. Active learning proposes to make learner at the center of learning and to consider its own knowledge, interpretations and assumptions. The second approach is situated learning which requires the implementation of learning in real contexts. We observed that, despite the advantages of both approaches, their implementation in classical learning is very difficult if not impossible.**

Thus, we propose to analyze the opportunities offered by the continuum E, M and P-learning to put into practice its approaches.

***Index Terms*—D-learning, active learning situated learning, collaboration, engagement, real context.**

I. Introduction

To ensure efficient d-learning, designing relevant contents and providing the necessary platforms and learning devices, though necessary, do not suffice. In fact, learner can't enter in learning situation and achieve the desired goals without being sufficiently motivated and engaged in the learning process. To do this, the integration of pedagogical approaches is essential. These provide methods and strategies that allow the learner to acquire knowledge and skills. Among approaches that have proven their usefulness: active learning and situated learning. These approaches put the learner at the center of the learning process. However, they are difficult to be applying in classical learning.

What is the applicability of these approaches in the d-learning? What are the opportunities offered by new technologies (mobile and pervasive) to apply these approaches? How can they improve the quality of d-learning? This paper attempts to answer these questions.

In the first section we present our definition of d-learning that includes the E, M and P learning. In the second section, we focus on two approaches to active learning and situated learning to pinpoint the difficulty of their implementation in classical learning. The third section will be devoted to the presentation of the opportunities provided by pervasive and mobile technologies for applying these approaches and success factors from the integration of these approaches to enhance quality of d-learning.

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II. D-Learning

The learning field has undergone several changes following the technologies and web services that have emerged. The first generation E-learning, the second is M-learning and actually P-learning. Prodigious technological evolution produce E, M and P continuum.

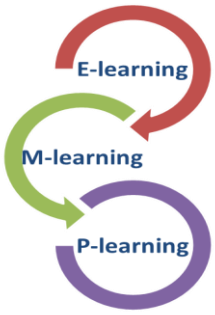

Fig. 1. E, M and P learning continuum.

We believe that it is time to return to the original concept distance learning (D-learning), as shown in Fig. 1, to combine all those concepts which usually are intertwined on several aspects.

We define D-learning as a learning environment enabling all actors to perform their tasks in technological environment. Learning environment that ensures the quality improvement of the learning process, regardless of any constraints, offers services using the web and appropriate pedagogical approaches to the context of each actor, as shown in Fig. 2.

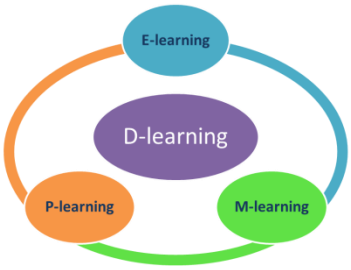

Fig. 2. Our D-learning vision.

In order to allow learners to achieve the learning objectives of the activities offered in a processed-learning it is essential to choose the most appropriate pedagogical approaches to their contexts. Among the approaches that

have proven their relevance and contribution: active learning and situated learning. We will discuss in the next section the applicability of these approaches in the d-learning.

III. Successful Pedagogical Approaches: Active Learning and Situated Learning

Learning is a key factor in the development of human capital. Obviously, it is not limited to a simple transfer of educational content, more than that, it should allow learners to use knowledge to acquire skills [1]. Several studies have been developed with the aim of highlighting methods to improve the quality of learning. Learning pyramid, Shown in Fig. 3 illustrates average student retention rates.

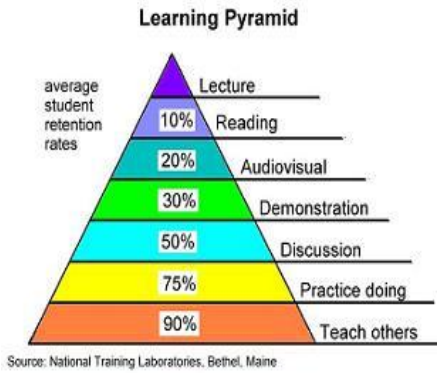

Fig. 3. Average rate of student retention rates [2].

To implement methods that give the best learning results, it is imperative to use appropriate pedagogical approaches. We present in the first the most appropriate approaches that provide high quality of learning.

A. Active Learning

Active learning put learner and their learning needs at the center of learning process in contrast to behaviorist approach in which teacher transmits learning content to the learner who is passive. “The resulting passivity is not only an obstacle to deep learning but it also makes it difficult for lecturers to gauge the degree of understanding that is taking place.” [3]

In fact, it is certain that the learner needs to use its own prerequisites and compare the content and knowledge offered by his tutor with his own assumptions and perceptions for better performance. In this sense, active learning proposes to give physical time to learner in order to put content and learning activities in connection with his own thoughts and prerequisites. Thus, active learning is defined as “process whereby students engage in activities, such as reading, writing, discussion, or problem solving that promote analysis, synthesis, and evaluation of class content. Cooperative learning, problem-based learning, and the use of case methods and simulations are some approaches that promote active learning.” [4]

This definition emphasizes some learning strategies which can be used in an active learning process in order to make leaner more committed in the learning process: working in the structured group, problem solving, case studies, individual activities, informal small groups, simulation.

Certainly, such methods can enhance learning process by transfer of new knowledge, improving critical thinking skills, increasing preservation and motivations. Active engagement and interaction are two important aspects in promoting deep approaches to learning and are essential to achieving quality learning outcomes [3].

In classical learning: class is not highly homogeneous, learners’ rhythms are different from one learner to another, and time is limited. Subsequently, is it possible for the tutor to provide a learner-centered learning and to keep learner pace? This is very difficult. Can technology solve these problems in the d-learning?

B. Situated Learning

With the evolution learning needs based on the development of skills, the practical implementation of theoretical knowledge has increased. Indeed, the acquisition of knowledge depends not only interact with other learners, but also the context in terms of educational practice in a real context. Hence, the importance of using the real context for practical learning activities.

To implement such learning, situated learning has emerged since last decades. Situated learning is the study of how human knowledge in the course of develops activity, and especially how people create and interpret descriptions (representations) of what they are doing [5].

This approach, defined as the combination of cognitive and constructivism, is highly recommended to achieve skills in a specific area.

In this model, the location where learning takes place plays a major role in the process of knowledge construction.

The concept of 'situation' covers several aspects of physical, social and cultural environment, including communication with peers during learning.

According to the theory of contextual learning, learning occurs only when learners acquire knowledge so that they make sense in their context of reference (their own memory, experience).

The situated learning assumes that the mind seeks naturally meaning in context i.ein the environment where the person is located.

Is the classroom, in the classical learning process, the favorable context for situated and active learning? What opportunities offered by technological context?

We think that the pervasive and mobile technologies integrated into the learning field provide new opportunities for the learner to improve their learning.

IV. Success Factors for a Higher Quality Learning in the D-Learning

D-learning is a dynamic and iterative process focused on the learner who uses technology amply to be more engaged and motivated. Thus, he becomes able to construct their knowledge and skills and reach the learning objectives.

A. Technological Environment Favorable to the Application of Active Learning and Situated Learning

The overall quality of learning is improved when learner have ample opportunities to clarify, question, apply, and consolidate new knowledge. D-learning provides

opportunities for learners "to engage new material, serving as guides to help them understand and apply information".

The first generation of d-learning has exploited wired technologies that gave birth to E-learning. The second one is characterized by the use of mobile technologies and Web 2.0 services which allows the appearance of M-learning. Finally, the third generation we are witnessing today is characterized by the integration of pervasive technologies which hatched the P-learning.

Since the first generation, the d-learning could overcome the spatial-temporal constraints of the classroom. Indeed, this learning environment allowed learners a first degree of mobility (even if broken). It also provided synchronous and asynchronous sessions that allow the learner to take time for physical linking content of proposed activities with their own knowledge and assumptions. In addition, the student became able to follow his own pace and he is free to choose their own educational route. The most important E-learning advantages are presented in Fig. 4.

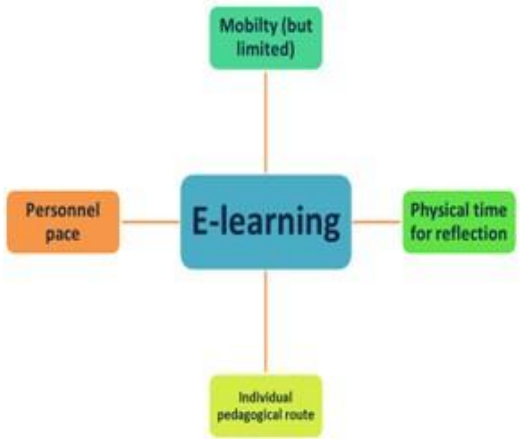

Fig. 4. Some advantages of E-learning environment favor to use active and situated learning.

Mobile technologies provide a wider degree of mobility. Mobile devices provide flexibility and accessibility to geographical areas inaccessible with a conventional computer. Subsequently, in addition to the advantages of E-learning, M-learning allows learner to be more autonomous in choosing his physical learning context. He can choose the appropriate environment for training focused on practical aspects.

M-learning seems to present a better opportunity to engage the learner in his training by allowing learning in a real context such as in the field of anthropology, archeology and geology. So, the situated learning can be applicable thanks to mobile technologies.

In parallel with mobile technology, the web 2.0 services and its successors have provided spaces for exchange and sharing through the creation of virtual communities for collaboration 2.0 allows learners to be more productive by effectively sharing ideas, questions, proposals and assumptions. Thanks to these virtual communities learner is engaged in the process of learning consequently active learning can be applicable.

The most important M-learning advantages are presented in Fig. 5.

The third generation of d-learning is characterized by the use pervasive technologies defines as "An environment in which people interact with embedded (and mostly invisible) computers (processors) and in which networked devices are aware of their surroundings and peers and are able to provide services or use services from peers effectively." [6]

Fig. 5. Some M-learning advantages in favor to use active and situated learning.

Pervasive learning means that learner can follow the learning activities everywhere. Pervasive technologies provide an environment totally connected and consistently available. "The goal of pervasive computing, which combines current network technologies with wireless computing, voice recognition, Internet capability and artificial intelligence, is to create an environment where the connectivity of devices is embedded in such a way that the connectivity is unobtrusive and always available."[7]. Through these technologies, the learner can be mobile, more than ever before, in rich and varied contexts: smart contexts. Content, despite of the device on which it is stored, can be used simultaneously. Learner's knowledge is always updated and available all times. Subsequently, Learner becomes more engaged and motivated. He can interact with his environment to exploit existing data and applications on different smart objects surrounding learner. He becomes active because he can benefit from the environment to build its own interpretations and check assumptions against the physical and social context.

Fig. 6. Some M-learning advantages in favor to use active and situated learning.

He may also solve problems rather difficult thanks to interactions between the smart objects in its environment and sensitive and richness context.

So the real context can be fully exploited and collaboration can be carried out all the time and everywhere.

Learner is no longer isolated whatever its location. He belongs to virtual communities mostly available to accompany, guide and always keep him motivated and committed. Some advantages of P-learning are illustrated on Fig. 6.

We can conclude that the technologies integrated to the field of learning and coupled with appropriate pedagogical approaches, provide a dynamic environment for the acquisition of knowledge, know-how and skills: collaborative, situated and active learning are therefore available.

B. Accompanying Measures to Better Engage the Learner in D-learning Process

Pedagogical approaches ally to technologies provide a good environment to learner but it's not sufficient. He needs to be more engaged in learning process in order to achieve all of leaning pedagogical goals.

In order to make learner fully committed and motivated, several accompanying measures are required:

- The clarity of learning objectives.
- Taking into consideration learner profile.
- Allowing more autonomy in the sense that learner can choose his own pedagogical route and its own pace.
- Encourage learner creativity.
- Put both theoretical learning with a practice in real contexts.
- Reinforcing learning process by a tutoring adapted to learner technological and social context.
- Allowing interactions and exchanges between learners in virtual communities.
- Taking into account informal content produced and sharing by learners.
- Creating collaborative structured workgroup.
- Using constructive assessment methods.
- Etc.

V. Conclusion

Pedagogy is an area that has seen an extraordinary development for a long time but unfortunately without finding a suitable context for their application. The integration of technologies in learning has overcome several constraints. D-learning, when allied to active and situated learning, allow learners to achieve the educational learning goals. Technologies have offered the ability: to engage the learner in the learning process, to encourage learner creativity, to support collaborative work, autonomy and communication. Also, it allows learners to get feedback and compare their ideas and assumptions to learning activities. In parallel, they provide a better environment to put into practice learner knowledge. Currently, the alliance between technology and pedagogy enabled the continuum E, M and P learning to provide the most appropriate environment for learning centered on learner and enhancing learning process.

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