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Original Article

Collaboration in Adaptive E-Learning

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Abstract *- This article focuses on adaptive e-learning between collaboration, which combines formalizing and well-structured e-learning or distance learning. Virtual learning environments and adaptive learning systems correspond to distance learning solutions that strive to meet the promise of individualized learning. The collaborative approach combines two approaches: that of the learner and that of the group. Collaborative learning is an active process by which the learner works to build knowledge. The trainer acts as a facilitator of learning. At the same time, the group participates as a source of information, as a motivating agent, as a means of mutual assistance and support, and as a privileged place of interaction for the collective construction of knowledge. In the collaborative approach, learners collaborate in Group learning and, in turn, the group collaborates with learners.*

Keywords *- E-learning, Collaboration, Adaptive e-learning, Educational style.*

I. INTRODUCTION

The adaptive system [1] provides a platform that adapts to the learner's behavior. The research question involves the representation of educational content. Still, pedagogical engineering [2] allows for particular definitions and modifications for specific reorganizations other than equipment using pedagogical technologies, methods, or tools aimed at pedagogical objectives. It will gain knowledge with the audience of learners.

Different communication tools (chat, email, forum, video conferencing, etc.) can help teachers develop collaborative spaces and enable information sharing to use the knowledge and provide learners with new skills. Based on the method of each learner and the ability of the organized world, teaching methods support the development of learners ' knowledge [3].

Learning autonomy is also essential. Belonging, it started as a group of people and then turned into a real online community. At the end of the course, learners decided to extend the experience by creating their own experiences. They invited us to participate in social networks to discuss internships, tools, experience, and coaching.

Psychology teacher BF Skinner (BF Skinner) created the learning machine in the mid-1920s; there was already the idea of teaching mechanization. Possibility of feedback based on their answers. It is, of course, limited, but behaviorist believes this is the future.

II. COLLABORATIVE LEARNING

Collaborative learning [4] is based on a social constructivist approach, which considers knowledge a personal psychological construction produced by personal experience gained through interaction with the environment. According to social construction, knowledge corresponds to subjectivity, it is realistic, and its value falls within the acceptable range of society.

For constructivists, we need to embrace such a social environment: sharing, confrontation, and negotiation help learners build knowledge and reach a consensus on reality while respecting individual differences. In other words, use the results of a single job through group activities or online courses.

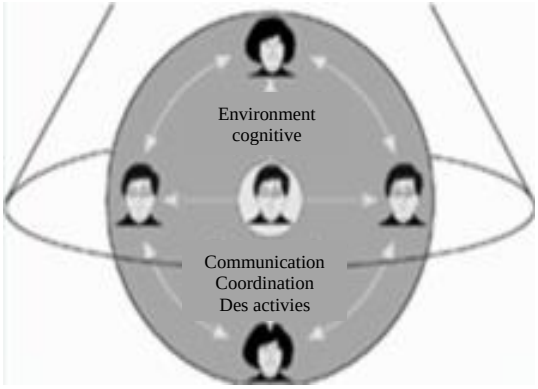

Fig. 1 L'approche collaborative dans le E-learning

Collaborative learning is about knowledge sharing. Sharing can take place in face-to-face meetings. However, remote collaboration provides a good learning environment. By providing a collaborative space for the team, everyone can collaborate in real-time or asynchronously, confront each other, negotiate and acquire new knowledge, and ensure diverse communication and coordination for each team member.

Moreover, support tools. In their book on collaborative learning, Henri and Lundgren (2001) [5] any learning activity carried out by a group of learners with a common objective, each being a source of information, motivation, interaction, mutual assistance ... [5]. Each of the contributions of the other beneficiaries of the group system and a well-presented individual and collective learning tutor's guide.

In addition, we can be found in this book [5], which includes the following guiding principles theory of cognitive flexibility, which provides several representations of the same object, and expresses various ways of thinking to facilitate the acquisition and dissemination of complex knowledge. Therefore, the scope of collaborative online learning is very broad topics and skills, but some concepts or skills may not be suitable for learning.

The navigation between forums reserved for forums is generally transparent [5]. In many systems, one can automatically switch from one forum to another, encouraging members to pay attention to all communications on the subject of the group's attention.

Table 1. The Electronic Forum. [5]

Forum electronic	**... for the learner**
What is it? What is it?	• It is a virtual place where the speech of a group, where the learner appropriates new knowledge • by conversing with others. • It is an agora of collaboration and socialization.
What does it allow?	• When is it suitable to use it? One can expose ideas, develop one's thinking, build new knowledge, and validate and confirm with the group's support. • It facilitates the learning of complex knowledge belonging to poorly or poorly structured domains. • It promotes a reflective attitude about learning. • It allows a group to live an experience motivating learning and developing a sociocognitive commitment that gives even more learning that is meaningful.
Who is Participating?	• Human agents who create a social network: The Guardian • Alternatively, the trainer and other learners work within small groups (spontaneous, informal collaboration) or a large group (supervised collaboration, formal). • Machine agents that make up the environment technology: tools for collaboration, coordination, and support cognitive and social processes.
How do we participate?	• Human agents transmit messages to the group; the interaction is the semantics of these messages. • Machine agents, grafted to the forum, offer automated support for learning by providing, for example, multiple representations of what is said in messages; this support is immediate, fast, and interactive.
When is it suitable to use it?	• When learning involves skills of high level such as analysis, synthesis, and evaluation, the forum is an appropriate educational choice. It is designed as a resolution environment for problems and decision-making. It testifies to the intentionality of the learning situation. • In a formal learning framework, when the learners feel they need others to learn, when a group of 15 to 30 learners wants to learn together with the support of a trainer and when they are willing to agree to reach a shared goal. • In an informal setting, when a sufficient number of people want to form a group • and work together to learn.

Table 1 represents the components; message boards and forums are collaborative tools, each of which contributes to the group work; the forum comes from the fact that it can, compared to other tools, meet a variety of needs in the collaborative group, as it provides an unprecedented human communication.

III. ADAPTIF LEARNING

Adaptive learning [6] raises several questions in online learning regarding methods and technologies and how to provide learners with adaptive content through personal data and skills systems.

Using online technology tools to develop educational content will be divided into several stages: the trainer will create an educational space or environment and manage the process to be followed to obtain and use the process successfully. Information is given to learners, which leads to the personalization of personal files and educational content.

Besides, through teaching and technical tools to develop interactive courses with learners, adapt to their educational needs, and make it easy to manage and understand for learners. To respect the learner's learning process, the teacher will have to propose learning activities. There are rules for establishing learning activities. They are derived from the way the human brain learns. Indeed, we need to build a hierarchy of activities for learners based on what we want to learn [7].

Guild 1997 compared several bits of intelligence, learning styles, and key principles of cognitive education. It concluded that these methods overlap with learner-centered methods and emphasize design and deep and extensive learning plans.

The learning style [8] corresponds to the characteristics of a group of learners in multiple dimensions, and each factor can cause individual differences in the learning situation. Each of these elements has its way and, at the same time, forms a functional whole with other elements. Kolb was the first to adopt an experiential learning style model, and then he influenced the construction of other models. In 1984, Kolb highlighted the principles of learning based on Discovery and experience in his book "Experiential Learning" [9].

Kolb's four learning methods depend on the stage of the learning cycle he prefers; Kolb gives different types of learner names:

A. Disagreement

He likes the stages of specific experience and reflection on experience. Disagreements are interested in people and emotions. He is good at observing and perceiving objects or problems from different angles. He enjoys innovative activities. He has a rich imagination and various interests. He is interested in people and values. He likes to learn by doing.

B. Assimilator

He prefers the stage of reflection on experience and the stage of abstraction and conceptualization of experience. Assimilators like to create theoretical models and are less interested in the practical application of people and knowledge than others are. It reorganizes information logically, taking into account both thought and theory. He enjoys the theory course.

C. Convergent

He prefers the abstraction of experience, the conceptualization of theory, and the implementation of ideas/actions. Convergent people like to be pragmatic and often have no emotions. Moreover, they prefer to deal with people rather than with people. He likes to solve problems, so the solution is unique. He has abilities in technical tasks and decision-making. He appreciates self-managed projects and activities.

D. Moderator

He prefers the steps of the specific experience and the implementation of ideas/actions based on this experience. Residents adapt easily to new experiences and tend to find solutions. He learns by manipulating and performing tasks. He likes to participate in the planning and execution of activities, and his work is more trial and error than logical. He tends to rely on other people's thinking rather than his analysis, and he is willing to take risks. He likes group practice.

Learning style is one way of explaining reasonable dilemmas in the classroom: it is a fact that in the context of a given teaching style, plan, or effort, some students learn while others do not. Given the key role of cognitive strengths and weaknesses, learning styles can be explained and understood [10].

The adaptive learning system resides in an adaptation engine that generates recommendations related to topics or concepts in learning material [11].

There are two modules in the adaptive engine "the referent is adaptive engines in adaptive learning suggestions Architecture" as shown in figure2 the difference between this architecture and the convention existence. The adaptive navigation engine can determine the subject or concept that the learner will learn.

In the recommendation system for teaching materials, once the adaptive navigation engine recommends a concept, the recommender begins by choosing teaching materials related to the concept and learners.

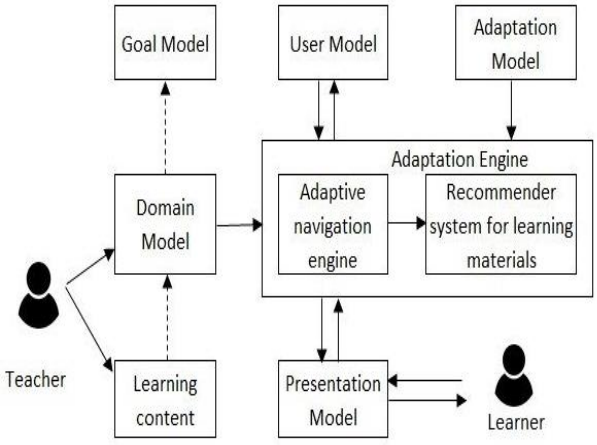

Fig. 2 The architecture of an adaptive learning system. [11]

IV. STRUCTURAL PEDAGOGY

Cognitive psychological theories [12] applied to teaching methods particularly promote the development of teaching methods, prescribe the cognitive path of learners, and decide to destroy requirements to create an ideal learning situation.

Therefore, given the prerequisite knowledge, cognitive conflicts, the acquisition of formalism, and problem-solving are some methods that guide learners to insert new knowledge rooted in a cognitive structure and well-integrated. The trainer plays a key and irreplaceable role (Bertrand, 1990). No other speaker not the system can replace the program.

The learners who learn their structure, but the trainer who sets up the learning environment is essential to developing knowledge.

A. Educational Strategies

Here the teacher chooses teaching strategies. He wants to know the relevance of different strategies or teaching strategies [13] strategies for the whole SA, such as direct business simulation, executing projects, solving problems, case studies, virtual meetings, etc., choosing a single educational strategy for the whole SA can be particularly beneficial for collaboration.

B. Educational Style

Table 2. Learning Preferences Based on Sensory Learning Styles. [14]

Sensory learning style	Learning preferences
Auditive learner	• Hears aloud, • Listens carefully, • Discusses what he learns, • Play vocabulary games, • Solves and makes puzzles, • Works in collaboration, • Screams and recites by singing, • Shares with others what he learns to clarify the lessons etc.,
Visual learner	• Memorize by using visual indexes and drawing images in his head, • Designs diagrams and plots graphs, • Clarifies the ideas through drawings, • Revises by watching videos, • Participates in school activities to live scientific experience, • Observes how others do, • Makes games and puzzles, etc.
Kinesthetic learner	• Seeks to move, • Prefer walking while listening, • Elaborates models, • Marks and highlights the essentials, • Manipulates material, • Lives experiences, • Imagine himself in situations, • Makes interpretations for stories and concepts, etc.

The following table expresses that no one can say that one style is better than another, as most people combine these three sensory learning styles and prefer one of them. [14]

Informed learning offers a more inclusive pedagogy because it can understand intelligence broadly and allows students to learn from their intellectual advantages without being marginalized by traditional learning methods (Barrington 2004) [15].

The combination of learning style and teaching style [15] can help us improve the teaching process and increase the effectiveness of teachers and learners.

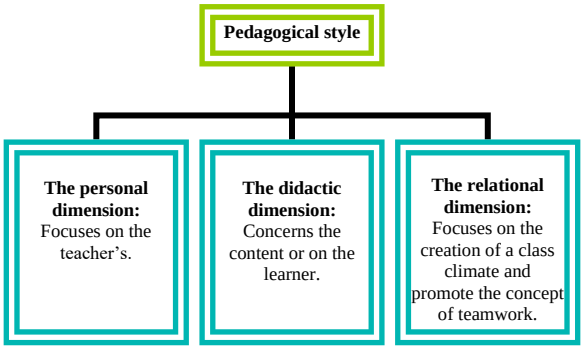

Fig. 3 Educational Style Dimensions

This figure represents the teaching style is the teaching methodology in the e-learning environment; very simple; it is the "teaching method ."[15]

V. COLLABORATIVE WORK IN ADAPTIVE LEARNING

Collaborative learning [16] is an active stage in which learners strive to develop their knowledge. Therefore, at the level of the adaptive system, a spacious and comfortable space must be provided to learn and demonstrate this knowledge. However, the classical representation of basic data and courses is usually found without communication or exchange of information.

In collaborative work [17], there are participants in the group without any division of Labor. The students will work in this way: build everything in the group and perform each step together, which will create a very coherent and coherent environment. Establish and strengthen group self-confidence among learners. Indeed, collaborative work is based on communication and information sharing, and each step consists of assessing the level of each position. The collaborative work model is a new development in the field of e-learning.

Collaborative work [18] is based on communication and information sharing at each stage and evaluating work at each stage. The collaborative work model is a novelty in the field of e-learning. This type of work trains many students to communicate via platforms, forums, or video conferences and use new technologies and teaching resources. Therefore, the result of the work is that you can well organize and organize the work and cooperate with stakeholders to perform and complete the same task simultaneously, which is also a task work/activity and maximize the sharing of tasks/activities. Information at Group level [18].

This type of work trains many students to communicate with each other through discussion platforms, forums, or video conferences and to use new technologies and educational resources.

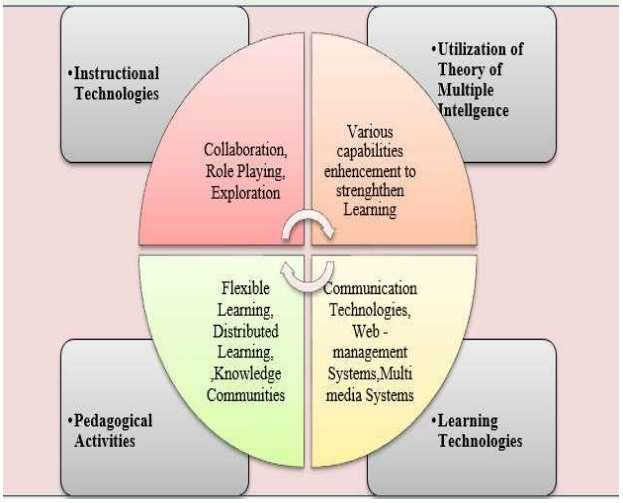

Fig. 4 Collaboration in E-learning

This figure represents a scientific, pedagogical and technological approach, emphasizing the role of collaboration in e-learning and adaptation to new technologies [19].

VI. CONCLUSION

This article aims to address collaborative work at the level of adaptive online apprenticeships. Therefore, despite the advanced technological development on a global scale, the role of this module in distance learning. Consider that the educational process is the main issue in designing and developing a new adaptive education system. It is about considering educational activities as educational content. Through formalization and management processes, teaching strategies and methods can be customized.

In short, the help of the Internet can improve the quality of Social learning, provided that learners and teachers are willing to take on different and even innovative roles: learners must take responsibility for their study, the teacher should no longer guide the study strictly speaking, but it must be able to guide, encourage and easy.

Learning is a cognitive activity, and from one student to another. Analysis of the adaptability of e-learning the system clearly emphasizes modeling the cognitive characteristics of the learner, especially the learning style is the most explored cognitive characteristic. In general, taking into personal account characteristics improves learners' abilities within the collaborative group.

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