The choice of communication and collaboration tools for the implementation of a collaborative activity in an LMS platform

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Abstract:

The choices of communication and collaboration tools for collaborative learning in an LMS platform can have reasons linked in a learning activity, we issue the preferable reasons of our proposed communication and collaboration tools. In this article, we explain how we chose these tools for our activity in each step of our pedagogical scenario.

In LMS platforms, the choice of the type of collaborative communication tool between learners was sought in priority, and when the tasks produced when it is provided to learners, in our work these tools were linked to the choice of the pedagogy on which supported the training so that the communication objectives were the priority of the training.

Finally, according to this study, which presents collaborative learning is based on a set of interactions between learners, learning objectives and available communication and collaboration tools. The learning community also participates in the resulting interactions, rules and work assignments, the practical implications of this collaborative approach for the design and choice of communication and collaboration technology tools in an LMS platform are then presented. and applied in the different stages of our pedagogical scenario.

Key words :

Collaborative learning, Pedagogical scenario, Collaborative activity, LMS platform, Technological tools for communication and collaboration.

Introduction :

A slight increase in the use of information technology in universities and institutions of learning and education, simulated intelligence changes the way students learn and facilitates and improves collaboration between them and with teachers. Today, major universities tend to move towards new forms of knowledge transfer called Massive Open Online Courses (MOOCs) [1].

In order to be able to understand what will be discussed in this work, it is necessary to circumvent the theory. It also has the effect of making the groups question their own perceptions of collective work in terms of practices, expectations or tools used. From proposed definitions to associated concepts, via an overview of existing tools, this article presents a complete state of knowledge on collaborative activity in an LMS platform. Finally, the contributions, issues and possible tools will be presented, the methods and tools for collaborative work [2].

In this dynamic, distance education has evolved, in particular to allow students to learn not alone but in collaboration with others. New communication environments are emerging and being exploited for educational purposes [3]. This is the case of virtual worlds, which present an interesting potential from the point of view of the technological dimension, since they facilitate the feeling of being at a distance thanks to the representation of the environment and the user through the platforms. LMS. These immersive spaces also have potential in terms of communication , as they allow multimodal interactions, not only between learners but also with the environment.

1.   Presentation and Functionality of the LMS platform

The platform can mainly target Content Management or Skills Management. This first case is a typical learning content management system (LCMS) [4]. The LCMS solution is an environment Create, store, reuse, manage and distribute educational content from a single repository, which helps to build a coherent program. LCMS tool and LMS are very close and complementary. This LMS platforms are often integrated as standard features of the LCMS and vice versa. Management Competence is one of the characteristics shared by the two types of solution. However, this management is more Works well in LMS because they are centralized and Build student profiles and skills Compared to all the training he may have done. Manage More interested in LCMS skills Skills acquired in training.

LMSs [5] can be classified according to their basic architecture, their distribution model (open source or proprietary), the computer languages used, the learning philosophy in which they are built, the type of target market (schools, companies), etc.

Function tool in the LMS there is confusion about the concept of function versus function. This is understandable since everyday language reduces the term function to its dimension to qualify what is functional and what is efficient. The use of this concept in computer systems has an even greater meaning [6].

While the function specifies a specific role, the function refers to a set of possibilities offered and its participation can be optional or obligatory in the exercise of said role. Tools exist to enable the exercise of roles. Platforms can provide the same tools but with different capabilities (we are free to introduce the concept of capabilities here).

2.   The concept of collective intelligence of a collaborative work activity:
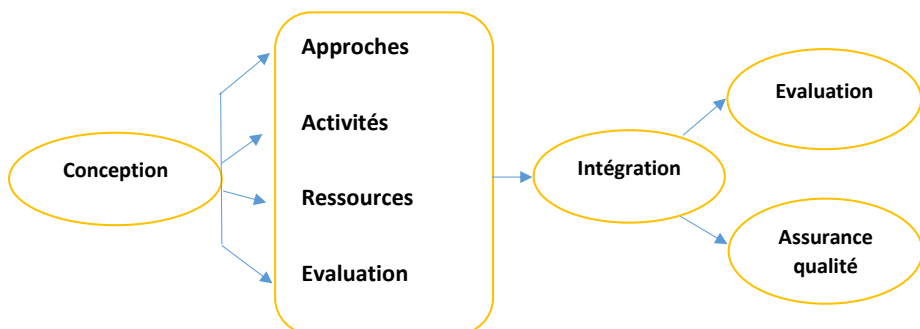
Figure1: Design of a collaborative work activity.

Recent technological advances in the ICT sector have allowed the emergence of new tools for collaborative work while presenting concepts such as collective intelligence, often associated with the notion of cooperative work [7].

For Pierre Levy, collective intelligence is "a distributed intelligence that is continually augmented and coordinated in real time, which results in the rapid mobilization of skills. [...]" [8] The level of intelligence of an organization, if not across the organization, is therefore not an individual sum of intelligence.

Collective intelligence is work group intelligence. According to Manfred Mack [9], it is "the value (or embodiment or result) of the combination and interaction of the knowledge, ideas, opinions, questions, doubts or results of many people . It is also the value of human beings." (Or performances or results) to which are added the contributions of each (knowledge, ideas, etc.) [10].

3. **The different types of work in an LMS platform:**

To the definitions of collective intelligence of these authors are added the concepts of sharing, collective and co-creation, which are all ultimately articulated around the idea of collaborative work. Thus, the implementation of collaborative work tools offers working groups the possibility of using collective intelligence to solve problems, coordinate projects or simply co-write documents.

Work cooperative	Work collaborative	intelligence collective
▪ **Work done by adding personal work,**	▪ The work is done by fusion and permanent modification,	▪ Autonomy of individuals considered as creators of meaning.
▪ **The reporter is often described as vertical,**	▪ Reports are often described as horizontal.	▪ Decentralization of knowledge and power,
		▪ Decentralization of knowledge and power,
▪ **It is not impossible that the style of communication is rather asynchronous,**	▪ Communication modes alternate between synchronous and asynchronous (particularly due to the democratization of ICT tools.	▪ Continuous interaction between individuals and their environment (technological, economic, ecological, etc.) whose changes are captured and controlled in real time,
▪ **The individual work carried out is easily identifiable at the end and under the responsibility of the participants involved.**	▪ Individual jobs are ultimately uncertain and responsibilities are constantly shared.	▪ The emergence of a new joy and a new morality,
		▪ The breakdown of large structures favors autonomous, small and friendly entities.

Table 1: Types of work in an LMS platform [11].

4.   Pedagogical activity scenario in a collaborative adaptive system:

Learning activities are tasks that learners must complete and are associated with a set of learning outcomes [12]. These activities can be carried out using the tools and resources that make up the learning environment. They can also take place in interactions with other learners and/or teachers. In the latter case, the notion of roles can be used to differentiate the allocation of tasks within an activity. These different synthetic elements are represented by the figure below.
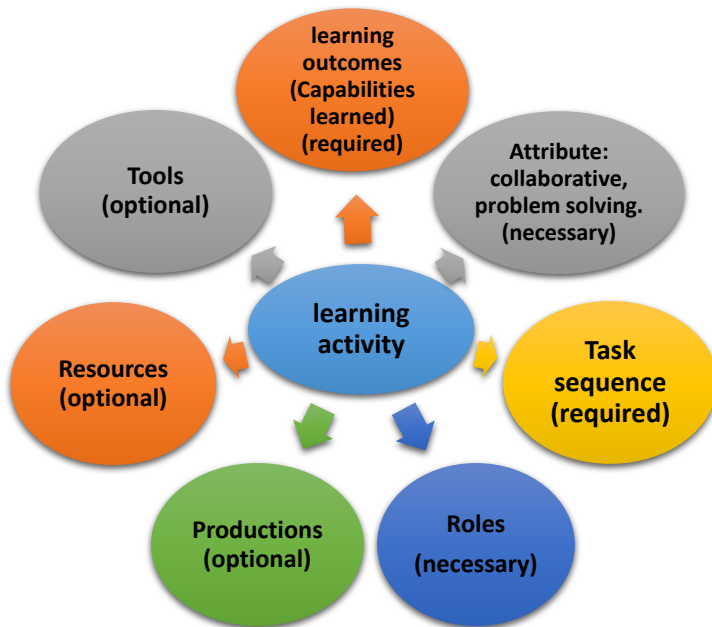

Figure 2: Pedagogical activity scenario in a collaborative adaptive system [13]:

5.   Results (The choice of communication and collaboration tools for the implementation of a collaborative activity in an LMS platform)

The main purpose of this following scheme is to facilitate communication and collaboration among online class members in an adaptive system [14], which can enhance collaborative learning by allowing students to discuss topics with their peers and with their teacher. LMSs can also use these tools to provide real-time support to students and track their progress.
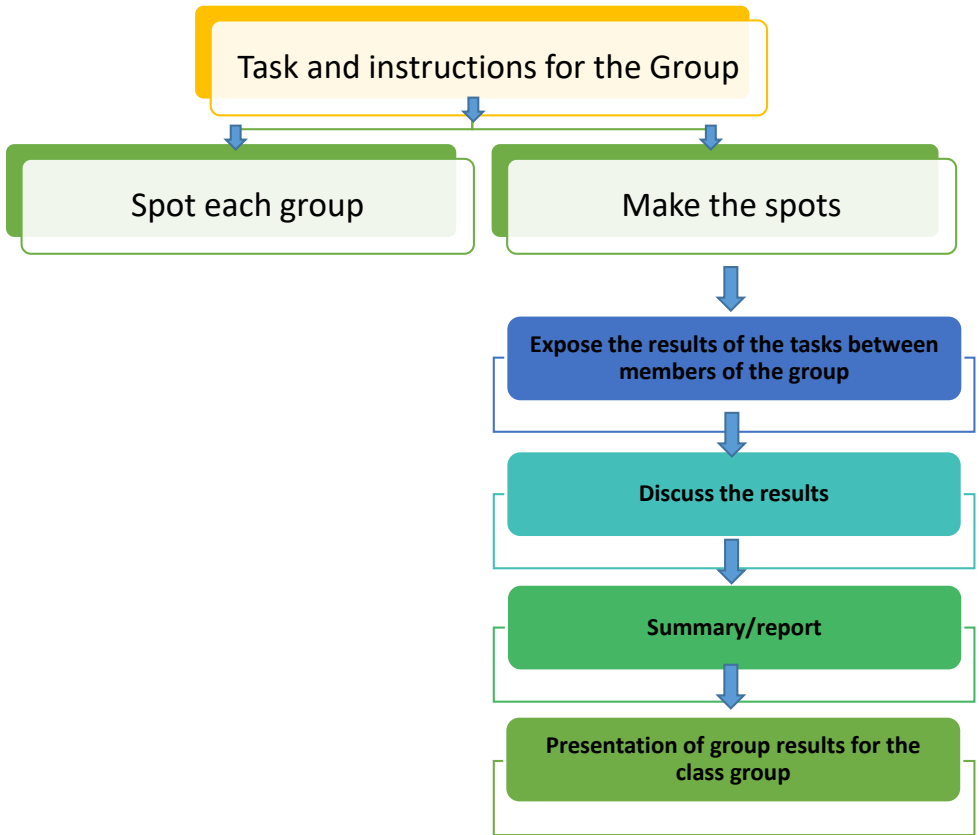
Figure 3: Communication and collaboration among learners

6.   The choice of communication and collaboration tools:
6.1. The collaboration cycle in an LMS platform.

Communication applications in LMS (Learning Management System) platforms allow teachers and students to communicate and collaborate online. They include tools such as discussion forums, instant messengers, homework comments, discussion groups, live chats, etc. [15].

Figure 4: The collaboration cycle in an LMS platform [16].

- **Co-analysis:** diagnostic work, allowing a group to understand a Face to the current situation and the composition of the cognitive library;
- **Shared definition:** At this stage, collective interaction allows the group to Formulate objectives to be achieved by establishing a shared vision;
- **Co-production:** formulating the rules of the game, defining an action plan and a timetable for achieving the objectives pursued;
- **Shared evaluation:** a form of interaction that allows a group of people to make judgments about the outcomes and value of shared decision-making and shared learning the process of.

    6.2. **Communication and collaboration tools in an LMS platform.**

Basic communication tools	Shared work tools	Knowledge access tools	Workflow tools
• Mail. • Cat . • Whiteboard. • Videoconferenc e. • Instant messaging .	• Sharing computer applications or documents. • Shared edition. • Related forums and tools.	• Libraries. • Peer to peer tools. • Portals. • Skills mapping. • Electronic directories. • Discussing lists. • FAQs. • WIKI. • Search engine.	• Workflow. • Task management tools. • Shared calendars.

Table 2: Communication and collaboration tools for LMS platforms.

In general, communication and collaboration tools for LMS (Learning Management System) [17] platforms generally include:

- **Instant messaging:** to allow students and teachers to communicate in real time.
- **Group Chat:** for students to discuss and collaborate online on projects and topics.
- **Collaborative whiteboard:** to allow students to work together in real time on documents and projects.
- **File sharing:** to allow students to share files and documents with their peers and teachers.
- **Web conferencing:** to allow teachers and students to participate in online sessions in real time.
- **Online assessment:** to allow teachers to provide feedback and grades on student assignments and exams.
- **Discussion forums** : Discussion forums allow teachers and students to discuss classroom topics and exchange ideas online.
- **Instant messengers:** Instant messengers such as built-in chat or third-party apps such as Slack allow students and teachers to communicate in real time.
- **Assignment feedback:** Assignment feedback allows teachers to provide detailed feedback on student work, which can enhance learning by providing helpful and constructive feedback.
- **Live Chats: Live** chats allow teachers and students to talk to each other in real time and ask questions immediately during online lessons.

6.3. Knowledge access tools (Classification).

Active information dissemination tools	FAQs
	The portals
	Wikis
	mailing lists
Passive skills research tools	Skills mapping
	electronic directories
Passive information search tools	Libraries
	Peer to peer tools
	Search engines

Table 3: Tools for accessing knowledge (Classification) [18].

6.4. The choice of communication and collaboration tools in an LMS platform.

In our case we have filtered the collaboration communication tools according to our need in the time of collaborative task progress from the point of view of adaptive learning, this following table presents the prior and adaptable tools with our system.

These tools may vary depending on the LMS platform [19] used, but their main purpose is to facilitate online communication and collaboration for students and teachers. These applications can be integrated with LMS platforms to provide a smooth and integrated experience for users.

Collaborative communication tools	Operation in the task	E-learning operation
E-mail	asynchronous tool, Works one-to-one or one-to-many, Access by users to one or more address books, Ability to attach a file to the message.	The learner sends a question to a teacher or several learners, The learner responds to a test by sending an attached file, Teaching sends information in an attached file to several learners, Teaching sends a complementary course, The teaching indicates where the learner can find the right answer.
Discussion forum	asynchronous tool, Works one to many, Forums usually concede a particular theme of an educational progression, Ability to create forums on the LMS platform, Creation of several forums within the same pedagogical progression, Ability to attach a file to the forum post.	The teaching asks a collective question in the forum, the learners find the solution collaboratively, Learners discuss a theme determined by the system, Exchange with an educational resource for all learners of future sessions, Teaching sends the task to the forum - learners solve as a group,
Mailing or discussion list	asynchronous tool, Works one to many, Sending the same message to several people,	The teaching sends an appointment reminder for all learners, The teaching sends news to all the learners in its group,

		A mailing list generally concerns a specific topic, Presence of several lists relating to a pedagogical progression, Ability to attach a file to the message.	Teaching sends the same task to a set of learners, Learners discuss a specific topic,
Virtual classroom		The virtual class designates a synchronous distance learning software with several functionalities, Written and sometimes oral chat, Participation during the course.	The synchronous task with the expositive method is delivered remotely with a presentation, A synchronous written exchange between learners and The teaching is done based on the task that takes place, The task to be carried out as a group based on a presentation taking place on the screen, A vote on a presentation.
Live chat		synchronous tool, In one to many people, Conversation written between several people, The exchange of data by sending files by certain cats.	A focus between teaching and a group of learners, The task to be carried out in collaboration, Live chat about the progress of the task.

Table 4: The choice of communication and collaboration tools in an LMS platform.

Conclusion :

Finally, an LMS is a platform that stands out for its ease of use to the detriment of the wealth of features [20]. From the original focus of our work and working for remote collaborative learners on an LMS platform, we have gradually come to focus on communication and collaboration methods.

Innovation only makes sense for education; it is a pedagogical innovation which is itself the result of a combination of practice and research. The use of an LMS should not lock teachers into an overly rigid "structure". The platform should be flexible so that the training reflects the teaching method the instructor wants to use.

Therefore, the selection of technological tools for communication and collaboration must be based on a detailed study of the needs and the development of the skills necessary to use these tools [21]. This work now aims to enable teachers to go beyond the occasional use of digital tools and become designers of learning devices and scenarios, thus creating additional educational value within the platform at the service of the learner.

This article describes the communication and collaboration tools used to implement collaborative activities in LMS platforms, with the aim of providing tools that facilitate participation in the learning process. Based on our collaborative work, our study provides the most adaptable tool to illustrate the use of LMS platforms.

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