COLLABORATIVE LEARNING NETWORK TOOLS EVALUATION

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Abstract— This paper is a proposal for a Collaborative Learning Network, whose implementation is carried out by selecting and using the most appropriate collaborative tools for the acquisition of the Transversal Competences that are common to all graduate studies.

This paper has evaluated several online tools, Google drive, Trello, Dropbox, Blog wordpress, Twitter, Evernote, +Google, according to Collaboration and Communication criteria. Each criteria has several items. By adding points of each item with the highest punctuation the online tools are Google drive, Trello and Evernote.

This project has been implemented in the Centro Universitario Cardenal Cisneros, so students are developing transversal competences in a collaborative way.

Index Terms - Collaborative teamwork, online tools, evaluation.

I. TRANSVERSAL COMPETENCES AT THE UNIVERSITY

There are many classifications to define and establish which key skills a university student should acquire in graduate studies in Spain, Trullen [6]; but we focus on those established Tuning [4], because it is an agreement between the various European Universities participating in the project. This classification establishes three main groups:

- Instrumental (up to 11 transferable skills) are tools for the effective conduct of a profession (cognitive, methodological, technological and linguistic).
- Interpersonal (up to 9 transversal competences): refer to social interaction and cooperation of the future entitled to their social environment.
- Systemic (up to 12 transferable skills) are skills or abilities of vision and analysis of total realities.

This classification of Tuning should be changed due to the specific context of this research: the acquisition of transversal skills by university students through online tools. The new categorization competence consists of three categories in which the competences established by Tuning are regrouped:

1. Autonomous Learning
2. Communication and ICT
3. Research skills and teamwork.

A definition of the category, the approach of some own objectives and strategy skills development has been made for each of these new categories needed to establish content and activities and assessment.

II. ONLINE COLLABORATIVE LEARNING, ONLINE TOOLS AND CRITERIA

In the mid-90s when the term "Computer Supported Collaborative Learning" (CSCL), translated into Spanish as "Computer-Mediated Collaborative Learning" appears. This is when the first virtual universities are created and their creation shows new concepts such as "online learning", "learning in

virtual environments", "cooperative learning in virtual or online collaborative environments."

At this point it is necessary to justify the decision to choose the collaborative teamwork methodology Johnson and Johnson [1] and Kagan [2]:

- Firstly, teamwork is a necessary competence in the professional future of all undergraduates, contain a sub-skills that include communication, job autonomy, organizational skills and planning, decision making, resolution problems ...
- Secondly, the kind of teamwork should be collaborative because all sub-competences are combined so that the result is optimal from the point of view group allowing the construction of shared knowledge and involving participants in an active way being all at the same level.

In the classification made by the Regional Observatory on the Information Society of Castile and Leon (ORSI) and the Regional Council of Chambers of Commerce and Industry of Castilla y León [3] a first classification of the tools is set according to three categories application in areas of business:

- Internal communication: Forums (Forumotion, My-forum), chats (Tinychat), blogs (Blogger), or social networks (Facebook, + Google).
- Knowledge Management: Wikis (Wikispace, Twiki), social bookmarking (Delicius, Digg), online storage disks (Dropbox, Hackpad, Box, Chatbox, Wordle) boards share links (Clipix, Symbaloo), publication of documents (Scribd, Slideshare, Issuu, TEd Ed), managing photos and videos (Flickr, Picasa, Vimeo, Jumpshare), management notes (Evernote), Collaborative maps (Google maps, Meipi) timelines (Dipity, Timetoast, Tiki-toki), collaborative whiteboards (Smartamp, Flockdraw, Vyew), interactive murals and posters (Mural.ly, Glogster, Padlet or Lino).
- Project planning: Tasks and Calendars (Google Calendar remember the milk, online meetings (join.me, Doodle), mind maps (Gliffy, Dabbleboard), or collaborative edition of documents (Writeboard, Google Drive).

Trujillo [5] proposes other tools related to the healing of contents (Scoop, Storify, Pinterest, diigo), design apps (Code, App Inventor), image processing (Picassa, Flickr, 500px. com, Panoramio, Instagram), geolocation (Eduloc, Tagzania, Wikitude, Myhistro), and podcast (Audacity, Divsahre, GoEar, Evoox), among others.

Given the fundamental pillars of Collaborative Learning methodology discussed above, and several online tools we need a set of criteria for selection those tools to achieve our goals:

1. Free Software or Open Source whose copyrights are public domain. This allows users to collaboratively modify the software and the results are published on the internet.
2. Accessibility (W3C) web universal regardless of the hardware, software, network infrastructure, language, culture, geographical location and capabilities of users.
3. Collaboration online (real time or not) that allows editing, assigning roles and exchange, etc, and evaluation of the work performed.
4. Internal communication between participants (chats, forums, ...).
5. Quality of the interface through ISO, UNE to ensure continuous improvement (evaluation tools).
6. Intuitive and easy to use (usability) that allows to comfortably work with the tools that appear.
7. Reuse of resources generated by the tool so that they can be used in different digital contexts.

III. RESULTS BASED ON COLLABORATION AND INTERNAL COMMUNICATION

This paper analyzes Collaboration and Communication criteria (number 3 and 4 of the above). Each of these two criteria have some items. Each item can be evaluated with an 0, if the tool has not the item; 0,5, if the item is satisfied by half; 1, if the item is satisfied completely:

- Collaboration criterion has these items: Positive interdependence and interaction, Control of individual work, Synchronous collaborative editing, Asynchronous collaborative editing, Management of group work (decision making , division of tasks and roles), Conflict Resolution (comments which can then be resolved), Asynchronous group discussions, Group management, Assessment of individual and group contributions , Allow sharing links, File sharing, Chat and Coordination in the process of assigning tasks.
- Communication criterion has these items: asynchronous communication, synchronous communication, Communication when there are changes, It lets put comments, It allows responding to comments, It allows evaluating comments, individual communication, group Communication, Communication via Forum, Communication via email and Communication via chat.

This section shows the results of an evaluation of the tools (by adding points of each item) with the highest punctuation: Google drive, Trello, +Google, Blog wordpress, Twitter, Evernote, Dropbox.

In figure 1, it is shown the results of the online tools depending on the two criteria: Trello, Google drive, and Blog Wordpress are the best online tools according to collaboration criterion; Google drive, +Google and Evernote are the best ones according to communication criterion.
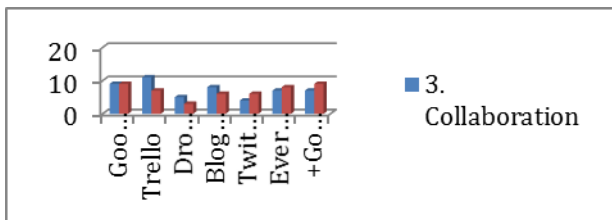

Figure 1. Collaboration and communication in online tools

Another way of presenting the information of the data is through the distance between tools. If you take the evaluation of each criterion for each tool and you calculate the module then, those tools with a bigger module are the best. In other words, those tools further from the axis are the best. You can find the results in figure 2.
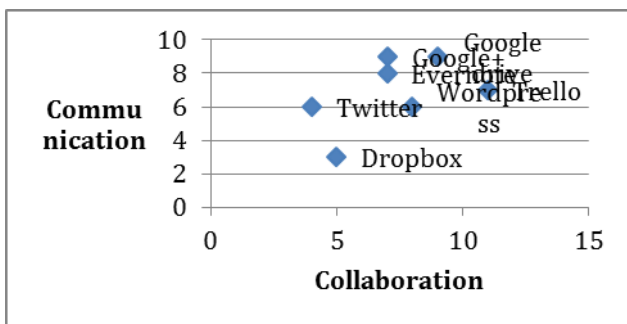

Figure 2. Modules of the online tools

Because of these results, a ranking can be created depending on the criterion you choose. Nevertheless, each teacher should think about what is the best combination of all these tools so students can develop the competences through a collaborative work. In this sense, for the transversal category of competence of autonomous Learning the best tool is Evernote; for the transversal category of competence of Communication and ICT the best tool is Google drive, for the transversal category of competence of Research skills and teamwork the best tool is Trello.

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IV. CONCLUSIONS

Students must acquire some competences in their studies (from Tuning), justified the choice of methodology for collaborative teamwork to achieve these competences. The relevance of the methodology of collaborative work causes, for this study, restructuring in three competency categories: Independent Learning, Communication and ICT and Research Skills, and Teamwork.

University students can considered appropriate to improve the acquisition of transversal skills in a virtual environment. The results of this study are proposed to be developed in several degrees, with a great variety students and faculty profiles.

Therefore, it is necessary to set up a Personal Collaborative Learning Space for teachers and students. This Space will provide users with online tools for collaborative work, communication, content management, document sharing. The function of this virtual tool is to enable students to acquire transversal competences. The creation of this virtual space relies on choosing a set of digital tools based on certain collaborative online learning criteria.

This paper has evaluated several online tools according to Collaboration and Communication criteria. The online tools with the highest punctuation are Trello, Google drive and Evernote. Currently, we are yet to define, design and implement the PCLS or digital resource (Trujillo [5]) which is the subject of this study.

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