ARGUMENTE: AN ONLINE ARGUMENTATION SYSTEM FOR FORMAL AND NON-FORMAL EDUCATION

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Abstract

ArguMente is an online system that offers two types of learning spaces. On the one hand, a close group space that implements a student-centred teaching strategy, the purpose of which is to automate the Dialogue Design System model for written argumentation (DDS). On the other hand, it offers a space for the exercise of an argued debate under a non-formal environment of education that calls for the creation of learning communities. Experiences for teaching argumentative skills and for teaching teachers have taken place through the first space, the closed classroom, while the second space, the open classroom, is being used to promote the autonomous argumentative dialogue.

Introduction

Argumentation is a linguistic process that is used to defend a position that we assume before a certain problem or situation. Whether in writing or orally, it must be understood as an interaction contextualized in other discursive types, which leads to questioning beliefs and testing one's own points of view. (Pérez, 2014). That is why argumentation is considered, not only as a competence in itself, but as a transversal competence that contributes to better learning since, as Hyland points out, disciplinary argumentation is a practice of inquiry, construction and communication of knowledge made by members of certain scientific communities, making use of academic discourse(Hyland, 2016).

Asterhan and Schwarz (2016), referring to several authors, mention that "Providing reasons why a certain explanation idea or opinion is faulty not only allows one to propose convincing arguments to refute that position in a discussion but also is likely to strengthen his or her understanding of the correct concept in the process"; this understanding and the skills involved in the generation of an argumentation occur in educational spaces, both formal and non-formal.

Formal and non-formal education

The Institute for Lifelong Learning of the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2012) considers that learning comprises a wide range of educational opportunities formally offered through schools (from basic education to postgraduate and higher education); but it also extends beyond formal education, encompassing non-formal and informal learning for youth and adult citizens who are out of the school system.

Considering that currently the didactic process is centred on learning, it can be defined as formal learning the learning that takes place in education and training institutions, recognized by the relevant national authorities and leads to the obtaining of diplomas and qualifications; it is structured according to criteria such as curricula, qualifications and teaching-learning requirements. On the other hand, non-formal learning refers to the kind of learning that has been acquired additionally or alternatively to formal learning. In some cases it is also structured according to education and training criteria but, in a more flexible way. It usually occurs in community contexts, in the workplace or through activities of non-governmental organizations. Non-formal learning, through recognition, validation and accreditation processes, can also lead to qualifications and other types of academic certification.

We agree with UNESCO that it is necessary to recognize and develop mechanisms for the recognition, validation and accreditation (RVA) of non-formal and informal learning in contemporary educational and economic policies. For this reason, we consider that education in the current context must integrate different scenarios to learn, that is, to resume training from the classroom to learn in formal and non-formal contexts and in them, develop the necessary skills in learners and citizens of digital contexts. One of the fundamental skills to learn to learn is argumentation since it considers the application of logical thinking for the development of critical thinking. We also agree with Scott, (2015), especially in the context of the pandemic, on the importance of students having the combination of critical thinking, creativity, and collaboration and communication skills, all of them necessary to deal with the new unexpected situations they will face.

ArguMente

ArguMente is a web system that supports different simultaneous processes in relation to argumentation that respond to a vision of contributing to the training of more active, more critical students, with the capacity to dialogue in order to face different day-to-day situations. ArguMente considers two types of spaces to exercise written argumentation: a closed classroom that takes up the idea of the school environment and formal education. In it, the teacher gathers a group of students and proposes theses to argue under a format

of a card, called Idea card; these are registered and graded with the specific feedback concerning the written argumentation proposed by the student. The other space, the open classroom, considers a freer environment for argumentation and, as its name implies, it is open. In this non-formal space, each user can create communities that summon people interested in the subject and propose theses to be discussed without a time restrain.

By working with ArguMente, students are immersed in a dynamic that forces them to progressively improve their argumentation and communication skills and competencies, either with the help of other colleagues (from the community or the group) and / or teachers.

Closed classroom

The closed classroom integrates the DDS model, where the teacher presents the unit or concept that will be developed throughout the week and prepares a thesis to reflect and / or discuss in greater depth on the subject. In the automation of this process, to generate a thesis in the system, the professor enters an area of the system in which a file is presented, in this file the teacher writes the statement corresponding to the thesis, the subject with which is related, the subject to which it corresponds, the level of studies in which it should be applied (baccalaureate or degree), the first argument and the first counter-argument derived from the thesis. The mandatory data in this file are the thesis, the argument and the counter argument; in this way, enough information will be stored so that the thesis can be applied by another professor or in other groups or even proposed in the open classroom. ArguMente is a web system that supports different simultaneous processes in relation to argumentation which respond to a vision of having more active university students, facing different situations they encounter every day. When working with ArguMente, students are immersed in a dynamic that progressively requires them to improve their argumentation skills and competencies, with the help of other classmates, staff students and teachers. In previous experiences, working with Idea cards allowed students to rescue main ideas from the academic readings or topics or as conclusions for each didactic unit reviewed. In several cases, these Idea cards supported them to improve their understanding, but also to prepare for exams. This is mainly because it forces them to analyse and synthesize ideas and have strong basis (evidence) that support their arguments. Although the methodology has been used primarily with social science students, this exercise can be applied to any area of knowledge. Figure 1 shows the student's interface in the closed classroom. The menu on the left side shows the options offered to the student in order to review the different theses that he/she has worked on or that he/she still has to work on. The thesis can be consulted in two ways, from the general concentration of all the theses or, through the groups created by the teachers and in which he/she is registered.
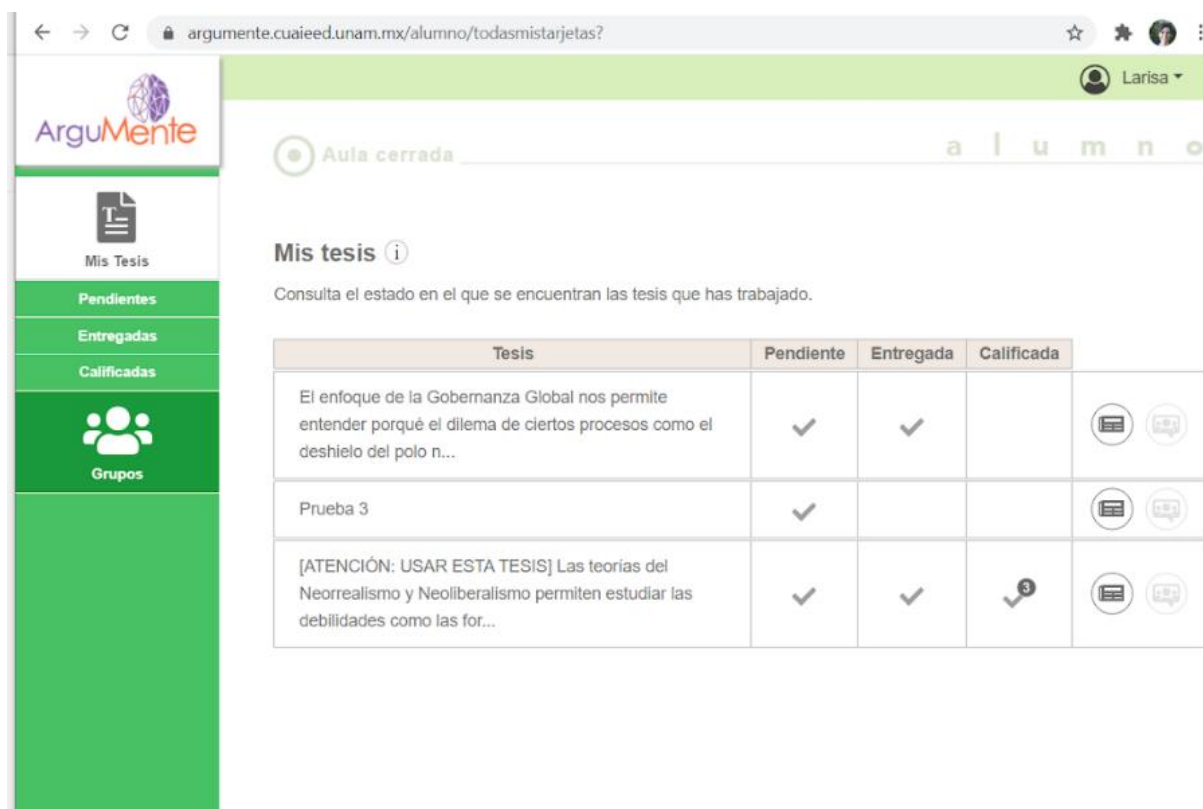
Figure 1. Student's interface

Figure 2 presents the teacher's who, in addition to being able to review and grade the cards that they have given to the students, either from the Thesis or My groups option (as in the case of students), also they have the options to create theses and to consult the catalogue of theses that have been proposed by all other teachers who use ArguMente.
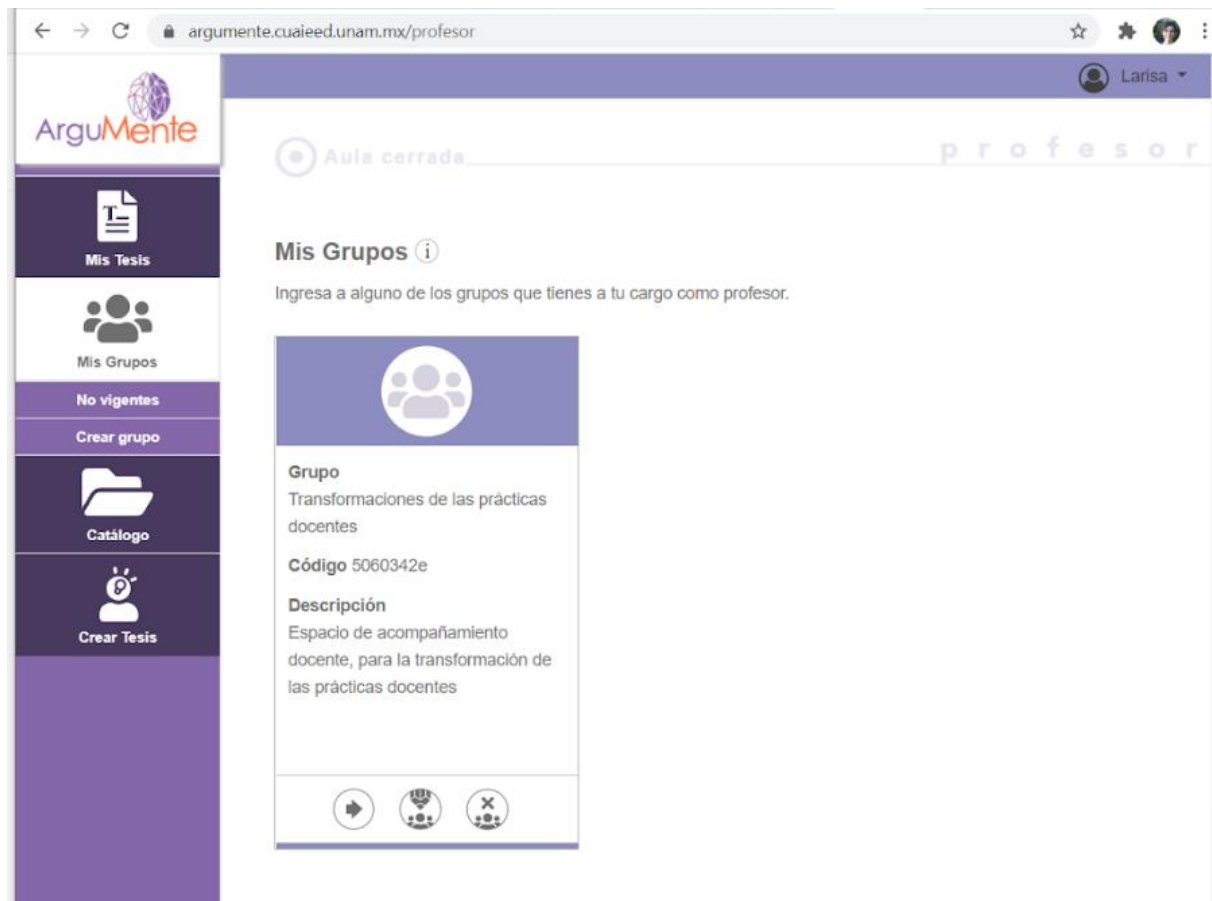
Figure 2. Teacher's interface

Open classroom

The open classroom, unlike the closed classroom, provides a space for argumentative debate where all people who are interested in it can participate. It is a space that raises a horizontal structure where anyone can submit a thesis as well as participate in any debate or dialogue that is taking place within a community and in which they are interested in participating. The open classroom only considers two types of users: the argumentator who actively participates in argued discussion, and the observer, who probably is someone interested in participating.

The way in which argued discussions are organized in this space is through communities, which can be proposed by the argumentator; Each debate begins with a thesis where one argument in favour and one against is shown, this allows the debate to be opened and the other argumentators can take positions and reinforce them with new arguments; with this they are forming discussion threads. Figure 3 presents the argumentator's interface, in the open classroom, for a specific community. It is possible to see the thesis that is being discussed along with an argument and a counterargument to it. The argument is in purple and the counterargument in orange. The argumentator who wants to join this discussion, will be able to select the button for or against, either for the main thesis or for a specific

supporting argument and, from there, write his/her own argument and add the supporting evidence.
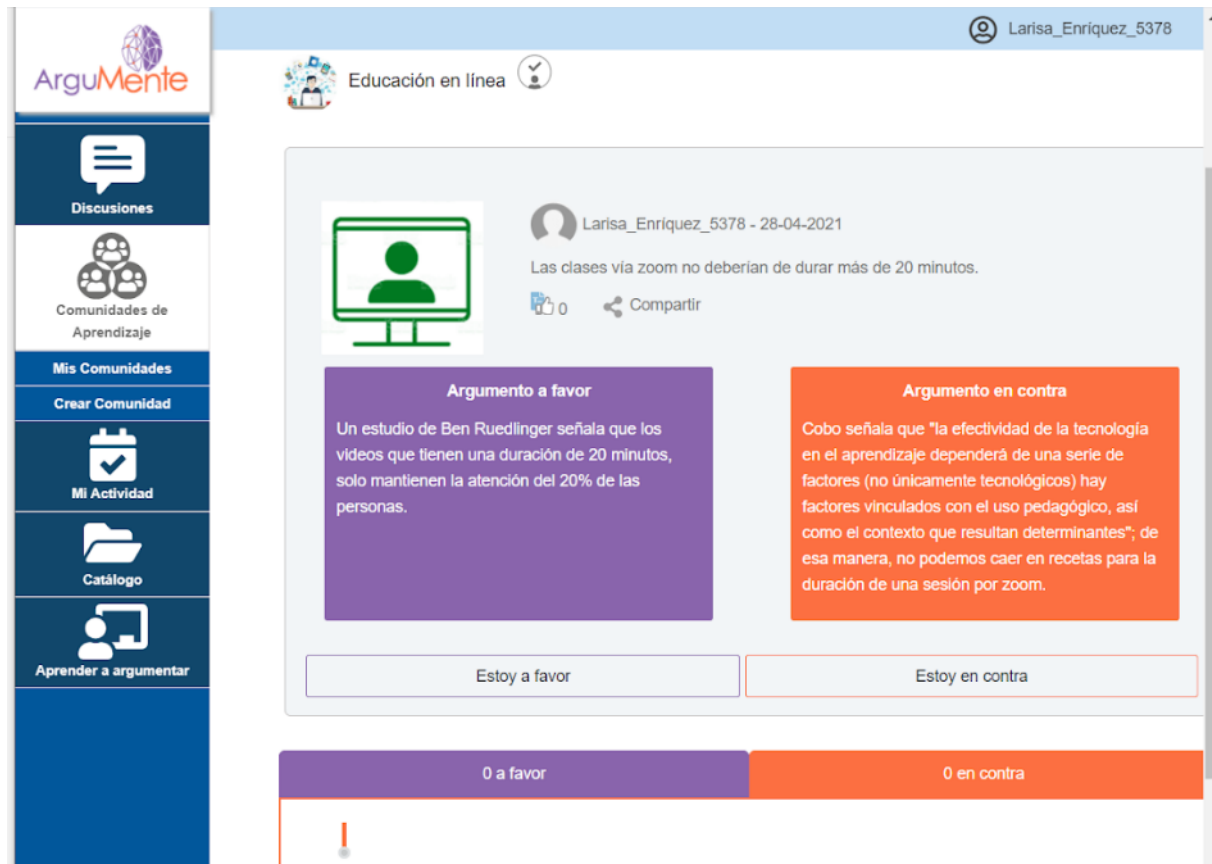

Figure 3. Argumentator's interface at the open classroom

Experiences using ArguMente

The first version of ArguMente's closed classroom was put to the test during 2020, through two different types of interventions; one with students from the Faculty of Political and Social Sciences at UNAM and another, for teacher training within the framework of a seminar on autonomous learning.

For the case of the political and social science students, as part of the doctoral research project of one of the authors, an assessment on the progression of the argumentative skills that the students were exercising, took place. The assessment endured 1 semester, 18 students of the Faculty of Political and Social Sciences voluntarily participated. During the 16 weeks that the semester lasted, the students worked on 4 theses, by solving idea cards. In particular, it was identified that students strengthened skills such as applying:

- strategies that guide a current speech, to identify aspects that are actually happening, and ask key questions about them;
- concept mapping strategies that identify important concepts and summarize knowledge;

- strategies that use connecting words as signals to stimulate thought and support the elaboration of a specific point;
- analytical strategies to identify information necessary to support a point, reflecting an implicit understanding of common argumentation schemes.

In the case of using ArguMente with teachers, a positive change in attitude was identified in them. They got more involved in the seminary; they progressively read more and widened their research sources as well as increased the quantity and quality of the arguments, generating more consistent and solid arguments than when they started the seminar (Enríquez & Hernández, 2020).

Regarding the open classroom, although this space has barely been released, there is important information from evaluations to identify user needs and usability tests. Although from the beginning of ArguMente's proposal it was considered that the open classroom would allow users to build an argued dialogue with other people, it was thought that the space would integrate some functions from the closed classroom, such as the thesis catalogue, the possibility to create thesis and to view idea cards that students from the closed classroom would have shared.

In September 2020, a survey was conducted with 84 people to identify aspects that ranged from their understanding of the debate and argumentation concepts, to the interest in participating in a space that allowed argued debates, in an environment of communities of interest. Based on the results, 8 of the respondents were contacted to interview them and thus obtain more precise information on the operation of the open classroom. As a result of these interviews, the following functionalities were also added:

- to publish and promote the debate of the month;
- to value as "I like" or "I do not like" the arguments presented by argumentators;
- to follow up on discussions and arguments in which a particular user participates;
- to follow up on communities of interest;
- to register in the communities where you want to participate.

Results

Teachers and students who had previously worked with the DDS model, found in ArguMente, great advantages, both for the creation, organization and review of the theses, as well as for the resolution, review and sharing of the Idea cards. Teachers and students who were not familiar with DDS identified a pedagogical advantage, both for teaching and learning.

Table 1 presents the results of the assessment carried out at the end of the semester, with the students who used ArguMente. It can be seen that in general, students liked the system,

found it easy to use and considered that the functions were sufficient to develop the argumentation activity. It can also be seen that 50% of the students indicated that they would like to continue using ArguMente.

Table 1:   Students' assessment results about ArguMente

	1 Totally disagree	2	3	4	5 Totally agree
The functions that the system contains were enough to make my arguments.	0.0 %	10.0 %	20.0 %	20.0 %	50.0 %
Navigation within ArguMente was easy to do.	10.0 %	10.0 %	10.0 %	10.0 %	60.0 %
Retrieving and viewing the graded idea cards was easy.	0.0 %	10.0 %	10.0 %	20.0 %	60.0 %
The system in general seemed simple to me.	10.0 %	0.0 %	10.0 %	20.0 %	60.0 %
I consider it necessary to have a tutorial or instructions to use the system.	0.0 %	10.0 %	50.0 %	40.0 %	0.0 %
The interface design is intuitive.	10.0 %	0.0 %	10.0 %	30.0 %	50.0 %
The design of the system looks nice to me.	10.0 %	0.0 %	10.0 %	10.0 %	70.0 %
I would like to continue using ArguMente.	10.0 %	0.0 %	20.0 %	20.0 %	50.0 %

Regarding the open classroom, the evaluations carried out so far indicate that those users who had previously worked with the closed classroom found the new proposal very easy to navigate and attractive, while those who did not know ArguMente, indicated some aspects to improve usability.

Conclusions

The online system ArguMente was developed considering the interaction in learning environments for different types of users with specific tasks for each of them. This characteristic allows developing the ability to argue in a teacher-directed manner or freely with other people who are interested in presenting arguments and evidence to support their positions. It seems to us of great relevance to generate options that allow students to develop fundamental skills in the current context, with the integration of formal and non-formal educational environments and scenarios, as it is proposed in lifelong learning, and that the various areas of their reality will also be transformed with this trend of lifelong learning. ArguMente has involved the experience and ideas of teachers, researchers and students. This collaboration and multidisciplinary work, in addition to creating a product that will benefit the university community, has allowed to generate, in the group in general and in the project participants in particular, a deep reflection, which has considered different perspectives, research interests and problems from each of the disciplines that participate, managing to build a comprehensive solution.

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