

## DUNES - DIALOGIC AND ARGUMENTATIVE NEGOTIATION EDUCATIONAL SOFTWARE PEDAGOGICAL REALIZATIONN - THE CASE<sup>1</sup>

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### 1 The DUNES pedagogical approach

Co-operation in distributed teams turns to be a very common practice at workplace and in everyday activities. Learning to collaborate in distributed teams is then an important educational objective. The learning primarily consists of handling and maintenance of the various goals and motives of participants during interaction. In other words, collaboration between different participants demands high-level coordination of actions between different actors. Moreover the collaboration must be justified. Possible justifications are that the task is compounded, or challenging in itself, or that its realization depends on the collaboration of participants with different and fixed roles. The DUNES system is designed to mediate the learning of these kinds of collaboration. Accordingly, three types of situations are designed to be supported in DUNES:

- Collaboration in complex tasks: decision making and transmission of information between participants assuming different roles
- Techniques of debate: Negotiation in competitive situations
- Situations of formal learning: Argumentative and consensual scenarios in the classroom
- The design of these situations is done by the teacher/facilitator while he is using the framework of a "case".

The users may access the cases through "DUNES school", and we may consider these cases as "the bricks" of the learning environment of DUNES. Our system can be used without using the cases but the use of a case does contribute to scaffolding argumentation and negotiation processes in a collaborative manner.

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<sup>1</sup> Note that another paper is being submitted by members of the DUNES consortium to this ICTE2002 Conference: "DUNES - Dialogic and argumentative Negotiation Educational Software – Technical Realization". The present contribution highlights some pedagogical aspects of the same project, relying, to a large extent, on the same conceptual basis and terminology.

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## 2 Definition of a case

The case can be thought of as a kind of a “story” which holds some questions in a specific context. The context may be a narrative from daily life or from any domain. When a facilitator designs a case he should consider first: “what is there to argue or to discuss about with regard to the issue at stake?” and, secondly, how this process will be started. Each case contains a key question that leads to argumentation, negotiation or decision-making. We assume – or rather, claim - that if the key question is good enough then the desired process will be fruitful. Each case contains also activities, tasks, and various resources intended to serve and guide the discussion.

In each case, activities are carried out in two alternative (though complementary) situations or modes: “Studio”, in which each user deals with his work asynchronously, or “Session”, in which the users participate in synchronous activities such as discussion, co-writing texts, etc.

**Design of a case:** The teacher/facilitator prepares the tools at the participants’ disposal during the session. While doing so, the teacher may use a script, which is available in DUNES school. The script of a case contains definitions for the schedule, pedagogical goals, content-related goals, etc. A case involves several concepts that are briefly referred in the following paragraphs:

**The task** is a piece of text that is written by the teacher/facilitator as a start for the learning activity. The task definition delineates an area of interest and reflects the designer’s intention (pedagogical goals and content-related goals) concerning the learning that should result from the achievement of the task. Tasks should trigger curiosity by proposing topics to which users can contribute or in which they could find interest.

Examples of tasks (which might also be the key question of the case) are, e.g.,: “Should we legitimate the use of mild drugs by everybody?”, or the study of a scientific phenomenon, like the vacuum.

**Schedule** refers to the timing of the various activities that should be carried-out in the case. The schedule is set-up in advance by the teacher/facilitator and is announced on the event calendar in the DUNES school portal for all participants. The schedule expresses the teacher’s/facilitator’s view of the time each activity should last.

**Content-related goals (CRG)** are what instructors or teachers intend the participants to understand/learn in the specific domain in which they are engaged. The CRG should be articulated in the system following the task definition. A CRG may be, e.g., to differentiate between the role of primary and secondary texts in the elaboration of interpretations in history issues.

**Pedagogical goals (PDG)** are what instructors or teachers expect the users should learn. These are general goals, which are not content-related and may embrace various domains. Such PDG may be learning how to negotiate, or how to argue; getting a better understanding of how we trust (or not) what somebody is telling us, etc. The pedagogical goals are very often implicit for the users.

PDG should prompt participants to comply with the achievement of the task. This should be done in accordance with the ontologies of the particular case under consideration.

**Data** – brings the relevant information on the task that the students have to fulfill. The data should illustrate the background for the issue at stake. The data should shed light on the reasons of why it is important to deal with that question. Some data may introduce the learner to relevant historical background, or set the constraints to be taken into account when dealing with a certain scientific problem.

**Social setting and framing (SS&F)** is the forum in which users are doing their activities and accomplishing their tasks. Activities can be done in peer interaction (in a small group of 2 to 6 peers), with

a whole group (or class), or by one learner alone. SS&F can be done in spaces defined as rooms for meeting among users that wish to interact.

**Activity** is the central concept in DUNES. Activities are the assignments participants accept or decide to undertake. Examples of activities are building an argumentative map (indeed, an essential activity in DUNES), looking for specific data, or writing an essay. All activities should have an **outcome**, which may be used in another activities - by the students and/or the teachers. In each case there are several activities. The same activity may be carried out several times in one case, as occurs with the argumentative map, which is usually built in successive and cumulative steps by all the participants in the session.

**Constructing the discussion in a specific case** - As part of the descriptive definition of the case, the teacher/facilitator may decide on the ontology and the ontology items that the participants will use in a specific case.

**Ontology** is a set of vocabulary and norms that guide the discussion. They are content-sensitive and stipulate the terms to be followed while supporting argumentative moves. For example, an ontology will adequately support scientific critical reasoning while another one will be better suited for supporting discussions in social or historical domains. Teachers will be able to define their "own" ontologies for the specific map layout. In order to enhance the collaborative character of the discussion and improve the quality and effectiveness of the communication among participants, the teacher/facilitator will use ontology items.

**Ontology items** describe all the metadata and acts of the participants in the system. An ontology item may be: a set of play roles (the special roles that participants take during the discussion), labels for articles and links to be used for non-speech acts (all discussion acts that do not refer to the interaction among the participants - such as argument, declaration, data, etc.), and speech acts (all discussion acts that do refer to the interaction between the participants - such as clarification, questioning, etc.).

The ontology items are "passed-on" to the argumentative map on the "pad tool" to perform the set of shape moves that users make to create the maps. All shapes and links may contain supplementary data attached (like own text or remarks, links to external textual or multimedia content, etc.).

Discussion in writing is, therefore, the quintessence of DUNES, and it takes place with the aid of argumentative maps, which are created by the users with the pad tool. **Argumentative maps** can be created by a group of users in the synchronous session or can be modified by a single user asynchronously in the studio. The teacher/facilitator may plan the discussion by preparing in advanced the (potential) content of the map that might be used.

### 3 An example of a case in DUNES

The Valladolid Controversy written by Nathalie Muller

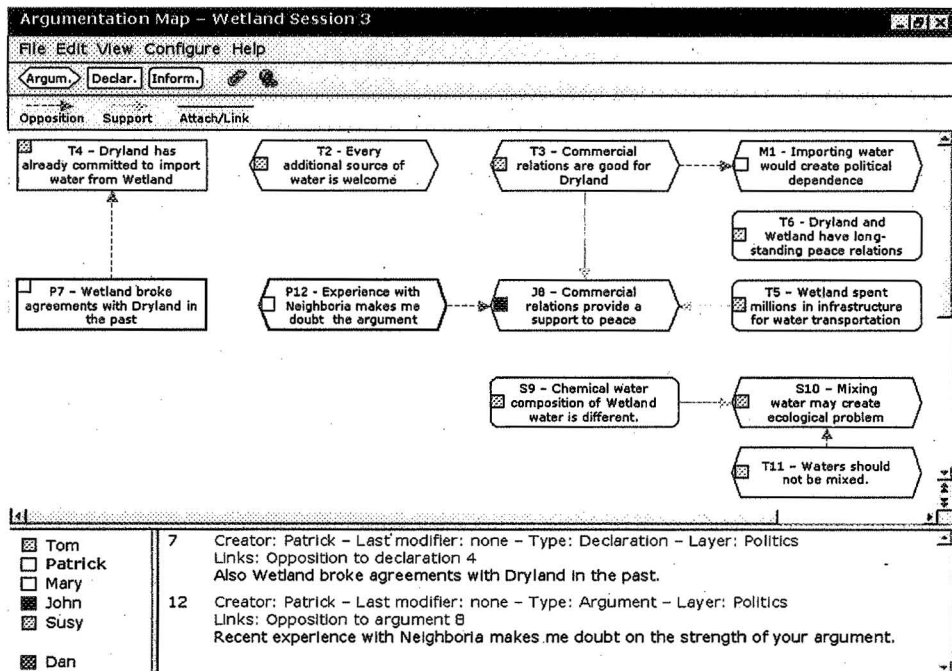
**Definition of the case:** Argumentative construction of knowledge through analysis of texts and confrontation of perspectives. Point of departure: an historical event.

**Task definition:** Through a role playing – which helps the learners to appropriate the sense of the history contents – the students are invited to answer the question that the Pope addressed to the Dominican B. de Las Casas and the philosopher Sepulveda, in 1550 in Spain: "Do the Indians have got a soul? Are they human beings?" The debate that will occur may take the shape of a kind of "theatre play". The records of this show could be the material for another didactic activity for other students

**Pedagogical goals:** This didactical activity aims at developing:

- “Decentration” skills (learning to take the perspective of other people situated differently in cultural and historical contexts)
- Cognitive knowledge (concerning the Azteque Indian; the Church in the 16th century, etc.)
- Argumentative learning (how to persuade, how to ground an argument, how to listen to his/her adversary...)
- “Historian know-how” (finding and reading texts and data, identifying their 'genre' and status, extracting information...)

An example of argumentative map in DUNES



The argumentative maps are the outcome of every discussion in writing that takes place in the sessions (i.e., in synchronous mode), and are then further modified by the participants following their (individual or group) work in the studio.

**Content-related goals:** learning how to read different genre of texts

Learning formal knowledge about the Indians, the philosophy and theology perspectives and their issues concerning the conquest ...

- learning how to extract information
- learning how to construct an argumentation
- learning how to participate to a debate

**Schedule:**

*Studio 1.* Introducing the case to the students: You are going to play the role of a person living in the 16th century who has been invited by the Pope in order to debate on the questions Do the Indian living in

America have a soul? Are they human beings? Yourself you are going to play either an Indian, a theologian who agrees with the idea that the Indian have a soul, or a theologian who does not agree (or a Conquistador?). You have to convince the Pope of your perspective. You have at your disposal texts and "argumentative map" - and the collaboration of your partners - that help you to ground your arguments...

*Studio 2.* Defining the preconception of the students on the subject.

Each student writes what s/he knows and thinks about the Conquest of America and the relation between Indian and conquistadors at this time.

*Session 1.* Co-constructing arguments in different roles – co-writing of texts

Each student chooses a role (someone to represent in the role play); this may be representing the Indians, the conquistador, or the church. Students get data - different texts, videos, photos etc. - from the library and co-construct their arguments in a collaborative way.

*Session 2.* Performing discussion in writing

All the groups (3-4) are invited to go to the « court room » where the "Pope" is waiting for them (= "theatre play"). They all have to present their perspectives and discuss them, knowing that at the end of the discussion the Pope will take a decision (and that their discussion will/could be the material for another didactical activity for other students...). The discussion is done with the argumentative map of the pad.

*Studio 3.* Reflection

Each of the students responds to the question: from your point of view, what decision did the Pope take at the end of the discussion? Students write small essays.

*Studio 4.* Reflection

What is learned in terms of formal knowledge? All the students develop the same questions as those given at the beginning of the activity concerning the conquest (or they may respond to the question: "from your point of view, what did you learn?")

**Roles:** Participants: different identities but having no consequences for the system (all identities have the same rights and duties...)

**Moderator:** is able to see what is going on and who is doing what.

**Data:** Textual documents, video clips (sequences from movie and theatre play)

**Outcomes:** Preconception (from each participant), Collective texts (one by group), Argumentative map, Individual texts (at the end), the scenario for a "theatre play".

**Evaluation:** By comparison between preconception and answers to the question "What did you learn about?"

## References

D1.1 Requirement analysis  
D3.1 Design and specification  
Drafts for various cases.

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