# **THE DEBATE BETWEEN THE STUDENTS: Element of learning knowledge and skills**

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#### Abstract

The debate, between different participants, in that there are requested those who they compete for a working place that they defend an idea. There is valued his (her) capacity of persuasion, his (her) fluency of speech, his (her) degree of adequacy to the companions and other aspects.

The debate has been prepared for a additive compounds, a subject from Food Technology. The students have defended the positions with valid arguments (the same ones that were in use previously in the exhibition on the part of the professorship on having given these topics).

It is a good skill to face up to themes with contradictory scientific information

#### **Workshop Topics**

Autonomous learning; Beyond active learning

## I INTRODUCTION

It is known that the debate, between different participants, in that there are requested those who they compete for a working place that they defend an idea. There is valued his (her) capacity of persuasion, his (her) fluency of speech, his (her) degree of adequacy to the companions and other aspects. But the debate also can be in use in the area of a subject (or of several of them) suitably ruled, in order to develop so much knowledge, which might be transmitted on the part of the teacher, as attitudes and aptitudes, by major difficulty of learning in our habitual environments.

We want to transmit an experience that is had successful in technical universities for topics that can provoke a certain debate (additives in food, food transgenic, social responsibility of the companies, adequacy of the study plans with to the real needs of the professional world, ...).

## II BODY OF PAPER

#### **II.1.** Objectives

- 1. To manage and make attractive a topic that can be loud and boring
- 2. To involve the students in the analysis of general information
- 3. To generate aptitude to debate founded on the respect
- 4. To foment the critical spirit not based only on the personal opinion

#### **II.2.** The experience

The parameters that have allowed the suitable development are, among others:

- 1. Definition of the groups of work from the presentation of the subject. They divide in 4 groups chosen by them themselves. One defends elements to favour (of the affirmation or question that treats itself), other one, elements in against, the third one it looks and confirms also information but with the aim to elaborate the script of the punctuation and / or to realize representing questions as public.
- 2. Individual and team responsibility of search of information, both of general diffusion and of scientific area, to support the group to which one belongs.
- 3. Participation in the forum of the group, with exchange of information and of scripts for the defence of the idea
- 4. Follow-up of one strict enough guidelines in the participation: they have to speak all, it has to be respected the time assigned in the initial exhibition and in the replies, there has to be coherence in the exhibition confirmed with scientific information, use of the " not verbal " communication, ...
- 5. There have to be respected the elementary procedure of education (they are reminded: punctuality, positions, attitudes, respect the others, ...).
- 6. The structure of the debate is closed: initial exhibition, two refutations and conclusions. 3 questions are allowed and the cycle repeats itself once.
- 7. For the criteria, which they know from the beginning, there is valued the diversity and variety of the arguments, the structure of the speech, the degree of correspondence of the arguments with the terms of reference, the support to the basic arguments with related ideas, ...

The experience has been very positive. The students have looked correctly for the information, both, legal and normative and scientific confirmed. They have

defended the positions with valid arguments (the same ones that were in use previously in the exhibition on the part of the professorship on having given these topics). It has turned out to be much more pleasant, with an implication and motivation very over the normal thing. To level of reversed time (recounted to classes attend them) it has been the same that in other occasions in which the teacher was exposing it directly. Before they have been necessary meetings with the different groups and there has been a lot of work of concretion.

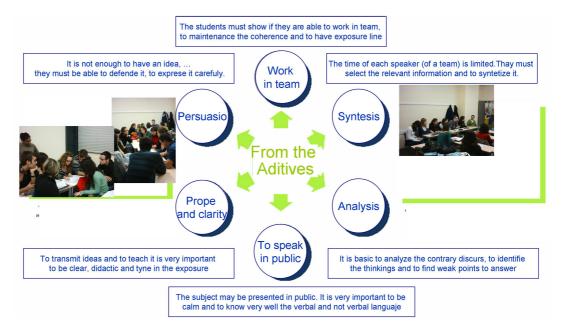


Figure 1: Scheme of experience

#### **II.3.** The improvement

- 1. Some skills that the students can improve:
- 2. They must show if they are able to work in team, to maintenance the coherence and to have exposure line.
- 3. The time of each speaker (of a team) is limited. They must select the relevant information and to synthesize it.
- 4. It is not enough to have an idea, ... they must be able to defend it, to express it carefully.
- 5. To transmit ideas and to show it is very important to be clear, didactic and tidy in the exposure.
- 6. It is basic to analyze the contrary discuss, to identify the thinking and to find weak points to answer them.

7. The subject may be presented in public. It is very important to be calm and to know very well the verbal and not verbal language.

### **III CONCLUSIONS**

1. The experience has been very positive.

2. The students have looked correctly for the information, both, legal and normative and scientific confirmed.

3. The students have defended the positions with valid arguments (the same ones that were in use previously in the exhibition on the part of the professorship on having given these topics).

4. It is a good skill to face up to themes with contradictory scientific information

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### REFERENCES

1. Boschert, S. [Learning to know, understand and value oneself]. *Pflege Z* **2010**, *63* (3), 158-160.

2. Hsiung, C. M. Identification of Dysfunctional Cooperative Learning Teams Based on Students' Academic Achievement. *Journal of Engineering Education* **2010**, *99* (1), 45-54.

3. Janz, B. D.; Prasarnphanich, P. Freedom to Cooperate: Gaining Clarity Into Knowledge Integration in Information Systems Development Teams. *Ieee Transactions on Engineering Management* **2009**, *56* (4), 621-635.

4. Kenjo, Y.; Yamada, T.; Terano, T. Agent-based simulation to analyze business office activities using reinforcement learning. *Agent-Based Approaches in Economic and Social Complex Systems V* **2009**, 55-66.

5. Webb, D. Achieving Excellence in Technical Communication Classes by Using IEEE Spectrum Magazine & Active Learning Techniques. 2009 Ieee International Professional Communication Conference 2009, 345-350.

6. Zavbi, R.; Benedicic, J.; Duhovnik, J. Use of Mixed Academic-Industrial Teams for New Product Development: Delivering Educational and Industrial Value. *International Journal of Engineering Education* **2010**, *26* (1), 178-194.