Argumentative literacy and rhetorical citizenship: The case of *Genetically Modified Food* in the institutional setting of a Greek primary school.

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This paper concerns the role of rhetoric in fostering the argumentative literacy of twenty four 12-year old students of a Greek primary school (case research). The issue of *Genetically Modified Food* provided the necessary 'space' for structuring various oral and written argumentative activities. In a constructivist context, the lesson of "Flexible Zone", as a feature of the Greek curriculum, offered students the chance to cultivate their *sophia* and *phronesis*, as future citizens and informed consumers through a praxis intervention. The critical discourse analysis of the produced oral and written argumentative texts revealed the production of more extended and better warranted arguments. At the same time, the quantification of data revealed a significant improvement of the **argumentative text-structure**. Through this point of view, rhetorical pedagogy can be related both to the acquisition of literacy as well as to the civic engagement of the young citizens who will shape the future *polis*.

1. Introduction

The instillation of virtues such as reflection, reasoning, awareness of the civil identity and of the sense of common good are necessary qualities of a citizen. Ever since antiquity, rhetoric as bipolar thinking and arguing upon every issue, was interwoven with this effort. In our era, characterized of rapid social and economic changes (at the *polis-* as well as at the *cosmo-polis* level) such an effort becomes critical for the formation of a more reasonable and humanistic social reality. Therefore, the teaching of rhetorical argumentation, even in the earliest stages of education, constitutes one of the most powerful tools for the attainment of such a goal (Zarefsky, 2004:35) through the development of multi-level literacies and the consequent construction of individual and social identities.

2. Theoretical framework

2.1. Rhetorical citizenship: from Isocrates to a critical pedagogy of citizenship.

Isocrates ascribes an important role to the acknowledgement of rhetoric as an indispensable medium of civic education. As a valued pioneer, combined rhetoric and literacy with the necessity of action, of *praxis*. Within the isocratic rhetorical *paideia*, literacy, as the capacity of talking, reading and writing effectively, must be accompanied by the reflective and responsible

expression of the subjective opinions upon current civic matters. In this way, Isocrates aimed at the formation of individual and social identities in the democratic context of his era and to "a collective inquiry into the good" (Poulakos, 1997:4-5).

Almost 2.500 years later, isocratic principles about the delivery of civic education to young citizens may be related to central notions of the modern critical pedagogy. According to it (Freire, 1985, Giroux, 1988, Welch, 1999), the empowerment of citizenship in the context of a changing modern society is based on the interaction of factors such as: a) the responsible and reflective challenge to political, socio-scientific and cultural data taken for granted, b) the consciousness raising which instills the social identity into individuals and c) the transformation of the current social data to an improved form through the active learning and participation of the citizen-agents. Active involvement in learning is guaranteed by participatory, dialogic, situated activities which lead students to become informed participants and literate persons in a community (Dewey, 1933; Shor, 1992).

As regards the key-term of literacy and its role to the acquisition of civic education, the modern socio-cultural approach (Christie, 1990, Knobel 1999) confirms the primitive -although crucial- interrelation that Isocrates had pointed out. According to the definition of UNESCO "literacy involves a continuum of learning in enabling individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in their community and wider society." (2004:13). The recent extension and plurality of the term makes literacy a prerequisite for civic education. At the same time, the active citizenship may be identified as a form of literacy mutually interrelated with other forms or levels of it. Critical, genetic, argumentative and school literacy constitute some of these levels as it will be shown later in this paper.

2.2. Teaching citizenship and multi-level literacy in the modern Greek school-context

School, as a socio-cultural institution, may offer the favorable 'cultural environment' where students and teachers will be able to co-construct the desirable civil virtues (Dahlgren, 1997). As regards the teaching of citizenship in Greece, the *Single Interdisciplinary Curriculum* directs its gaze to a broader conception of it following the demands created by the interdependence of events in different fields of the global social life (Keating, Hinderliter Ortloff & Philippou, 2009). Therefore, besides the development of the "Greek identity and conscience..." - it mainly aims at the intellectual, moral, social, economic, political and cultural development of the young Greek citizens. The "knowledge and understanding of universal and diachronic values of society" (p. 230), the critical evaluation of matters concerning liberty, equity, justice, human rights etc., the acquisition of the necessary skills for free, responsible and active participation in the social, political and economic spheres are

referred as necessary processes for attaining such goals. The whole effort takes a more typical, systematic and organized form, once a week, in the 5th and 6th class of primary school (11 and 12 years old) and the 3d class of Gymnasio (15 years old). Because of the limited time dedicated to the formal civic education, the development of citizenship is, complementary, attributed to an inter-disciplinary approach diffused across various features of the curriculum. (http://digitalschool.minedu.gov.gr/modules/document/file.php/DSGL104)

For example, the lesson of the 'flexible zone' in primary school consists of an "umbrella" (*Journal of the Greek Government*, 2005:17715) under which various interdisciplinary practices and programs may be included. Emphasis is put on the development of critical thinking through collective forms of action and dialectical communication (Ministry of National Education, 2001:10). This 'semi-typical' lesson aims at the achievement of cognitive results as well as to the learning of values and pragmatic aspects of real life. Therefore, it offers the chance to develop the 'citizenship literacy' as well as the genetic citizenship and literacy, by examining "socially acute questions" (Legardez & Alpe, 2001), as the socio-scientific issue (SSI) of Genetically Modified Food. The interrelation of the genetic issue with the argumentative and critical literacy may facilitate the construction and expression of the students' identities as members of a social group through purposeful literacy practices (Gee, 1990:143).

In the case of genetics, such an effort becomes necessary, since the science of genes is not merely limited to a narrow community of scientists. On the contrary, as a field of scientific endeavor and of social interest directs and imposes new modes of individual and collective thinking and decision making, about the creation of life, health, environment and, consequently, the plane-tary society (Danker Kolstø & Ratcliffe, 2007). It demands the active engage-ment of the individuals with various sources of information and knowledge as well as with the actions of debating and arguing about the application of bio-technology in modern human life.

On the other hand, argumentation, as linguistic expression of a socio-cultural practice, serves to the construction of a discrete textual form. At the same time, it consists of a crucial factor to civic education, since it favors the emergency of critical thinking and participatory skills due to its interactive nature (Schwarz, 2009:120-1). In Habermas' view (1984) argumentation consists of the hard core of communicative rationality and guarantees the unity of the objective world and the inter-subjectivity of individual worlds. For Habermas (1968), the development of argumentative discourse consists of the linguistic vehicle which carries the necessary "hermeneutic" and "eman-cipatory interests" for the formation of an active literate, citizen-agent.

Furthermore, by integrating 'different voices and opinions' in an oral or/and written argumentative text, students extend their intellectual and critical horizons and discover the necessary linguistic and metalinguistic ex-pressions (i.e. argumentative markers) which facilitate the representation of

their identities and the negotiation of their standpoints (Golder, 1993:349, Tseronis, 2011). In terms of the rhetorical theory of genres, the instruction of the argumentative genre represents a form of "social action" which has to be based on rhetorical, situated practices and activities (Miller, 1984).

In sum, the rhetorical engagement to the global issue of GMF, may create a parallel activation of multi-level literacies, capable of conducing students to "the expansion of [their] personal and social identity" (Intzidis & Karantzola, 2008:8). As it becomes obvious, the idea of the construction of a literate, social identity of students influences the following case study. Simultaneously, it examines the role of teaching argumentative speaking and writing in the instillation of such identities.

3. Data of the study

3.1. Purpose

Purpose of the intervention was the improvement of the students argumentative writing and the production of higher level argumentative texts through which they might express their personal and social identity.

### 3.2. Materials and methods

3.2.1. Theory and methodology

Our case-study research describes a praxis intervention with 24 students, twelve years old, in the sixth grade of a public elementary school in Alimos, an urban zone of Athens. The experimental group shared an homogeneous middle class social back-ground. The intervention was carried out for a total of fourty four (44) didactic hours of 45 minutes in a period of 6 months.

A praxis intervention program was considered an appropriate method for the construction of a literate civic identity. According to the social constructionist approach, the shape of an identity stems from the community in which we belong as individuals (Bruffee, 1986:774). Writing, as an "act of identity", may be influenced by the applied practices and interactions of the community in which it is generated (Ivanič, 1998:32). Therefore, the destabilization of pre-existent educative practices or *habitus* and of personal, crystallized ways of thinking and acting, the enhancement of a more 'reflexive monitoring' of texts, of classroom practices, of the self and of society, may conduce to the genesis of more conscious, literate and active citizens (Mahdu, 2005:49-50). As Vygotsky (1981) notes, social life and argumentation, both, determine the higher intellectual capacities and possibilities of each individual (p. 157).

Theoretical and methodological models that influenced the realization of the intervention were:

a) **The educative model of rhombus** (Fig. 1) which examines the teaching of language as macro-genre. According to it, a bilateral relation between the

promotion of literacy and the construction of identities of the participants-agents can be justified (Koutsogiannis & Alexiou, 2012:71).
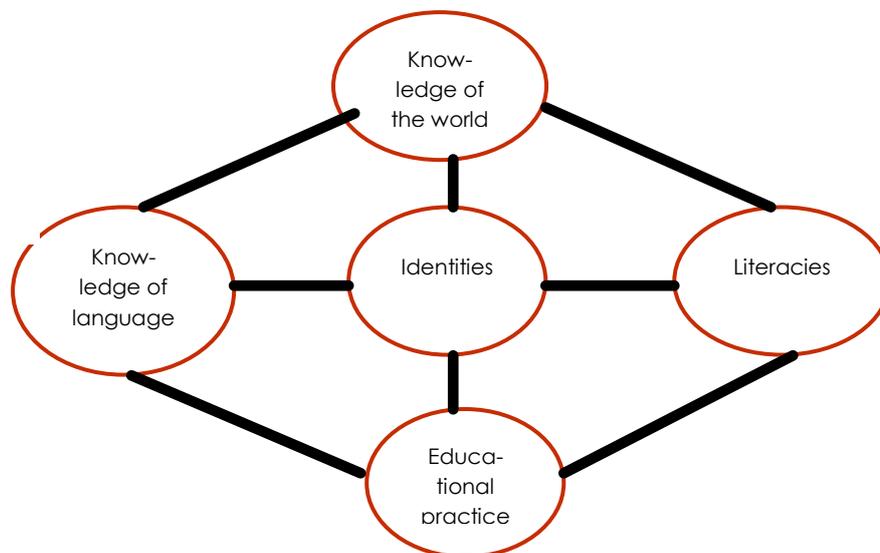
Fig. 1. The model of rhombus

This relation is developed, in equal terms, in a more complex web through the inter-dependence and inter-influence among all of its factors such as: a) the *knowledge about the world* (values, attitudes etc.), b) the *knowledge about language* (meta-language), c) the *teaching practices*, d) the intervention of *literacies* and e) the *identities.* The model seems to be influenced by **the sociological model** which examines the development of *citizenship* as a complex process, directly interwoven with the acquisition of *identity* and *civic virtues*, the integration into a certain *community* (classroom) and the access to various economic, cultural and political *resources* (school) (Turner, 1997:6).

Other theoretical resources were: b) **The theory of social identity**. For H. Tarjfel and J. Turner (1986) the formation of social identities depends on the meanings that individuals attribute to themselves as members of a particular social category (p. 16) and c) **the sociological analysis of emotions.** According to it, there is a recursive and transformative interaction among emotions and cognitive representations of the self and of features of the social reality with the social structure and the culture which influence the expression of salient identities (Stets & Turner, 2008: 33, Stets, 2007: 206).

The corpus of data was composed: a) by transcripts from audio-taped activities in the classroom and b) by students' individual pre- (Text A) and post-test (Text B) in the form of an argumentative opinion-essay. The results of the students' oral activities and written texts were analysed in qualitative and quantitative terms (triangulation of data). The qualitative analysis was based on the dialectical-relational approach of critical discourse. More specifically, the three-dimensional model of Fairclough (1995) examines the linguistic choices that reveal the form and the texture of the produced texts, situated in a specific social context and interwoven with the practices that

generate them (Wodak and Meyer, 2009:27). The category system was identified as reliable because of the calculation of Cohen's Kappa coefficient for two raters (Cohen 1960). Alpha values of 0,60 (statistical significance:p<0,003) and 0,833 (statistical significance:p<0,000) were obtained for the observations regarding the level of the *decided* and *evaluativist* argumentative texts written after the intervention (Text B). Therefore, there was evidence that the observation system used by the researcher was valid.

3.2.2.   Materials development and the praxis intervention

The intervention was realized in two phases:

<u>**PHASE I.:**</u> The first phase included typical strategies such as: **a. The choice of the theme** (1 hour): The issue of Genetics was proposed by the official manual of *Flexible Zone*. Its choice was based on the vote of the students for it. **b. Reading and analysis of the book-text** (1 hour). **c. Gathering and presentation of data** (5 hours): Students read in class various texts (journalistic, web-texts) that they brought and presented photos relative to the issue. A short discussion about GMF followed, while students expressed their comments to the presented images. **d. Writing of an argumentative text** (1 hour)**:** Students developed their arguments for or against the use of GMF (pre-test). The theme was: *"What is your opinion about the use of GMF in your daily life?"*.

At this phase, the oral interactions among teacher and students were limited to typical forms of questions and answers. The educational practices used intended to the acquisition of a basic knowledge about GMF and to the familiarization with the necessary vocabulary related to the issue.

<u>**PHASE II.:**</u>The second phase included cognitive and social strategies of learning such as: **1) Use of audiovisual media** (1 hour). A short video of the Greek educational television (http://www.edutv.gr) was presented. Students were equally informed about the possible positive and negative consequences of GMF. 2) **Opinion of experts** (2 hours). Two experts visited the classroom. First, an industrial chemical and, second, a member of the Greek *World Wildlife Fund* (WWF). A short conversation followed about the role of biotechnology in alimentation.

3) Drawing ideas (2 hours). Students drew a picture inspired from the conversations about the possible positive and negative effects of GMF. Fantasy and enthusiasm were replaced by negativity and denial as shown by the drawings (Fig.2, 3).

4) Posing the problem (2 hours). Students expressed and justified their attitude about GMF by playing the linguistic game *The chain of explanations*.

5) Direct instruction (4 hours). Students were taught basic elements of the argumentative genre such as: argumentative topics (cause and effect, antithesis etc.), types of evidence (statistics, testimonies etc.), expressions of modality (*should*, *must* etc.) and connectives (oppositional, concessive etc.).

6) Modeling (1 hour). The modeling of the argumentative genre aimed at the facilitation of recalling the structure of an argumentative text (thesis /reason(s) /counter-argument(s)/rebuttal (s)/conclusion/evidence).

7) Reading, listening and analysis of text-models (5 hours). Five texts brought by the students into the classroom were re-read and broken down into their component parts in order to help them go beneath their first surface meaning.
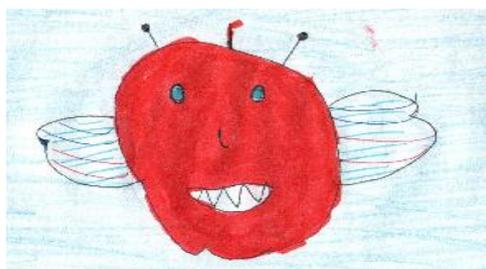
Fig. 2 The Butterfly-apple

Fig. 3 No to GMF

8) Oral interactions (10 hours). Students realized various oral interactions such as: a) _Linguistic games_. During the game "Tell the opposite" each student was stating his/her opinion and was asking the next classmate to state the opposite idea about GMF (1 hour). b) _Role-playing debates_. The role-playing debates created the necessary context for the development of arguments. For example, as clients-consumers, students were asking the green-grocer of the 'laiki' market why the tomatoes and potatoes were so big, red and round or, as commercial agents of _Monsanto_, were trying to persuade the producers to buy GM seeds of tomatoes (2 hours). c) The _Six Thinking Hats_ of De Bono (1985) (3 hours). As consumers, producers, citizens and scientists, students worked collaboratively and developed their parallel argumentation considering the issue under multiple perspectives. d) _The use of brainstorming technique_. The students were divided into 6 groups of 4 members and tried to find arguments for and against the use of GMF for ˙(i) the human health, (ii) the environment and c) the society (1 hour). e) _Parliamentary debates_ (3 hours). Students exchanged arguments for and against the use of GMF. The above practices aimed at their familiarization with various roles and opinions. At the same time, students shared common experiences and felt pleasantly during the learning process.

9). Emotional arousal (2 hours). Students expressed their feelings and thoughts towards a real fact. Four of the biggest Greek milk-industries were accused by _Green Peace_ of using GM animal feed to the percentage of 90%, resulting in the ascertainment that the milk was positive in GM substances.

10) Dyadic collaborative writing (2 hours). Students, in pairs, wrote a letter to the milk industries that used GM animal feed. **11) Observational learning** (4 hours). Students, as observers, developed their metacognitive,

metalinguistic and critical skills by evaluating and commenting   the oral and written activities of their classmates.

12) Individual writing (1 hour). Students wrote a second text where they expressed their arguments towards GMF (post-test).

3.3.   Findings

3.3.1.   Qualitative analysis of the oral activities

Oral activities aimed at a change of the formal educational practices as well as at a parallel alteration of students' knowledge about the world and the language. The game "*The chain of explanations*" provoked their skepticism about personal thoughts and attitudes as well as about educative practices. For example:

-   (Antonis):"In the beginning I thought that it would be fun…hhh… to… create new products, but, then, Mrs. Helen made me understand that they are dangerous… What about you?"
-    (Konstantina): "I still don't know if they are good or bad. I am very confused… What about you?"

The game "Tell the opposite" helped students to be familiarized with the expression of counter-arguments related to the use of GMF and to the development of the art of controversy.

-   "The use of GMF will solve the problem of malnutrition worldwide, because the production will be increased".
-   " Maybe you are right, but have you ever thought that the industries will control the production of goods? The farmers will be obliged to buy new genes every year!"

The role playing debates contributed to the creation of different context and to the adaptation of students to various identities and modes of thinking beyond their own. Therefore, students transferred their thought from one social context to another:

-   (Nikos as farmer-seller): "These tomatoes are improved. That's why they have this color and shape. Also, they are more tolerant to cold weather. So you can eat tomatoes all year long".
-   (Marilena as consumer): "They seem so perfect to be real. They look like plastic. I'd rather buy a green cabbage for my salad."
-   (Apostolos as producer): "The crops that you are selling destroy bio-diversity. Nature knows how to improve its products by itself."
-   (Despina as agent): "You are right to have doubts. But you must know that the crops produced by precise genetic engineering techniques are as safe as the crops which are generated by natural selected inter-sections. You will have secure results and, trust me, your production will increase. So, you will earn more money."

By wearing the *Six Thinking Hats* of De Bono, students extended their thinking through the dialogue with their peers as consumers, producers, citizens and scientists and identified themselves   as a different individual or collective entities. For example:

- (Mary): "As a scientist wearing the yellow hat of optimism I assure you that you don't have to be afraid of GMF. Genetics is the science of the future, the science that will guarantee a better and healthier life to our children. Research will continue in order to prove that genetic modification does no harm to human beings. We want consumers to trust our products and choose them with their own will because they prefer them."
- (Vassiliki): "As a Greek citizen wearing the green hat of creative solutions, I suggest that the state must support biological cultivation instead of genetically modified. We can export our biological products and earn more money…".

Two debates were carried out in classroom in order to offer students the opportunity to be engaged in public speaking, to "inter-think" (Mercer, 2009:182) and to understand the usefulness of audience-based discourse.

- (Evangelos): 'Me and my team, we are against the use of GMF. The opponent told that GMF have a beautiful shape and color. But, I really don't understand how it is possible for you to like a purple tomato. Also, maybe some mice lived 20 more days in the labs of Great Britain … but the researches refer only to animals not to humans… and we all know that we are different organisms from mice. So, we don't really know if they are good or bad…".

The information that the daily milk of their nutrition was positive in GM substances acted in a catalytic way on the students' judgments. A heap of intense feelings such as rage, anger, sorrow, insecurity, anxiety was arisen proving that "increasing our capacity for emotion enhances our ability to reason" (Nelson, 2005:8) and reminding the role of 'passion' in every rhetorical situation. At the same time, salient thoughts and judgments were activated. Students wondered about the role of legislation, the informative role of television or as consumers demanded official information about what they eat and the placement of labels on GMF in super-markets, criticizing, implicitly, existent policies or insufficiencies of the state or of the consumers:

- (Dimitris): "I don't feel safe because I don' know if what I eat is genetically engineered or not. Shouldn't the representatives of the milk industries be taken to court and put in jail? What they did was awful, since thousands of Greek children drink their milk. Fortunately, *Greenpeace* revealed this big secret that concerns all Greeks… If I could have the control of these industries I would try to change a lot of their practices…
- (Nikolas): "I feel angry because we pay a lot of money for our milk. I am wondering why TV didn't present this information…".

3.3.2. Quantitative analysis of the written texts

The criteria of students' pre- (Text A) and post- test (Text B) quantitative analysis with the S.P.S.S. (statistical package for the social sciences) were:
a. The argumentative level of the text. Following the taxonomy of levels of argumentative texts proposed by Mani-Ikan (2000) a rating scale from 1-5 was created. Each text was marked by a number representing a different argumentative level: a) 1 point for the *unwarranted* texts, b) 2 points for the *one-sided* texts, c) 3 points for the *multiplist* texts where despite the appearance of oppositional arguments no explicit conclusion was drawn, d) 4 points for the

decided texts where the choice between the contrastive argumentation was not grounded and e) 5 points for the *evaluativist* texts where the adoption of the proposed argumentation was based on a refutation of the opposite argument/s. Lower average means of the scale represented a lower argumentative level of the text while higher average means represented a higher argumentative level of the text.

b.Argumentative markers (of claim and of modality) used. A rating scale from 0-2 was created according to the following norm: a) 0 point (0= no use of argumentative markers of claim or modality), b) 1 point (1=use of an argumentative marker of claim or modality, at least once in the text), c) 2 points (2= use of both argumentative markers of claim and modality at least once in the text). Lower average means of the scale represented limited use of the argumentative markers in the text.

Two statistical tests were used: a) The McNemar non-parametrical test, for measuring statistical significance of the percentage of the matched-pre-post test results. In our case the test was applied in order to conclude if the intervention had a significant effect on the student's argumentative writing before and after the activities of the second phase of the intervention according to the above criteria at a significant level of 5%. b) The Wilcoxon's, non-parametrical test was used in order to detect the existence of statistical significant differences at a significant level of 5% between the average means of texts A and B as regards the first and second criterion of analysis.

The activities during the second phase of the intervention were considered as the independent variable of the research (YES/NO) (Verma and Mallick, 1999). The average mean of the argumentative level of the text and of the argumentative markers constituted the dependent variables.

As for the first criterion of analysis, the McNemar test showed significant changes in the percentage of the level of the texts written before and after the intervention (Text A vs. Text B).

Related-Samples Wilcoxon Signed Rank Test
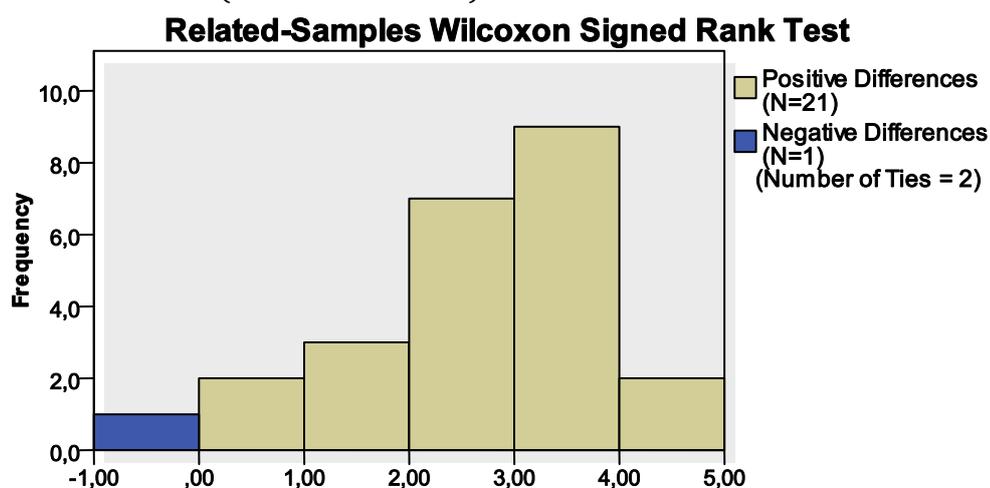
Figure 4: Positive and negative differences in the argumentative level of the produced texts

After the intervention a significant statistical difference was observed in the percentage of the produced texts of the *unwarranted* level (33%:Text A vs.

o:Text B) (p=0,008<0,05), of the *decided* level (0:Text A vs. 29,2%: Text B) (p=0,016<0,05) and of the *evaluativist* level (4,2:Text A vs. 45, 8%: Text B) (p=0,002<0,005), while no significance was noticed in the texts of *one-sided* level (54,2%:Text A vs. 20,8%:Text B) and of the *multiplist* level (8,2%:Text A vs. 4,1%:Text B).

According to the Wilcoxon signed rank test the average mean M=1,88 (SD=± 0,9) of the argumentative level of the pre-test (Text A) increased in the post-test (Text B) (M=4,00, SD=± 1,18). The analysis showed a significant difference of the mean of argumentative level between Texts A and B (p=0,000<0,05). Positive differences in Figure 4 indicate that the students produced texts of higher argumentative level after the activities of the second phase of the intervention (Text B) while the negative difference expressed the final absence of unwarranted texts.

For the second criterion of analysis, a significant increase of the percentage of the argumentative markers used was noticed after the second phase of the intervention. In particular, the proportion of the students (N=12) that used argumentative markers of claim varied from 50% (Text A) to 91,7% (N=22) in Text B. The McNemar test confirmed a significant statistical difference in the use of argumentative markers of claim (p=0,000<0,05). A significant difference relative to the use of argumentative markers of modality (p=0,002<0,05) was also noticed. The percentage of the students that used argumentative markers of modality increased between Text A and B from 8,3% (N=2) to 62,5% (N=15) correspondingly.

According to the Wilcoxon signed rank test the average mean of the use of argumentative markers varied significantly (p=0,000<0,05) from M=0,58 in Text A (SD=± 0,654) to M=1,54 in Text B (SD=± 0,658). The positive differences shown in Fig. 5 highlight the increased use of argumentative markers after the activities of the second phase of the intervention.
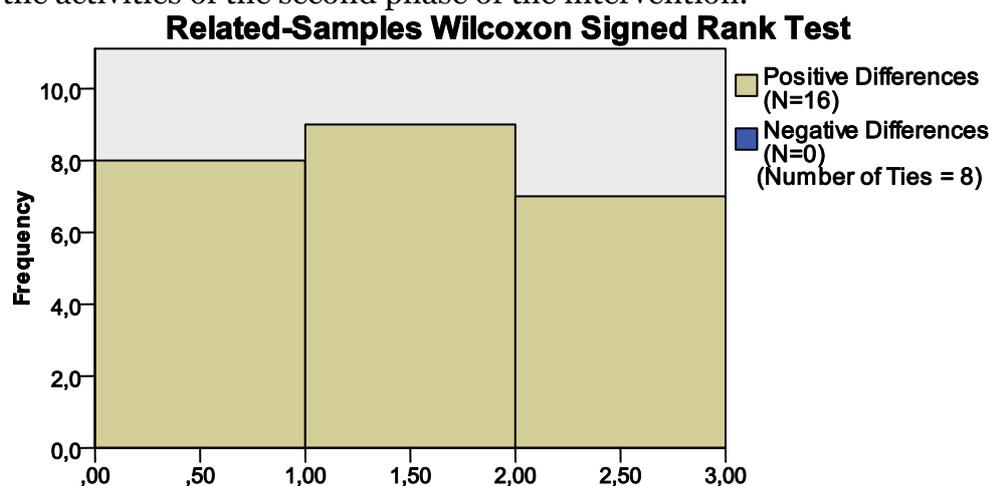
Figure 5: Positive differences in the use of argumentative markers

3.3.3.   Triangulation of data: further analysis of the texts

The free written argumentative text (Text A) reflected a negative attitude towards GMF representative of a similar broader public European and, especially, Greek reception (Gaskell et al., 1999, Marouda-Chatjoulis:1998). Thirteen students (54%) stated their opposition to GMF, four students (16, 6%) kept a positive attitude, while seven students (29%) were neutral (Fig. 7).

Despite the results obtained, the qualitative analysis of the texts showed that the generalized denial towards GMF wasn't supported by personal and conscious "discursive constructions" (Lankshear & Knobel, 1997:95). The students seemed to find difficulties in the expression of their "discoursal self" as writers. A complete absence of linguistic units which express personal values, beliefs, or experiences, that is elements of the individual identity was noticed. Correspondingly, only three students used linguistic elements though which identified themselves in relation to some social group. In other words, students had a superficial approach of the whole issue through the habitual, cognitive practices of thinking, reading and writing.

The majority of the initial argumentative texts were unwarranted (33,3%) or one-sided (54,2%). In the first case, a heap of informative patterns about GMF was noticed (ex. 1). In the second case, the arguments resulted as a mechanical reproduction of stereotypic ideas about human health, reiterated as a traditional cliché (ex.2). The negotiation of opposite ideas and their critical evaluation was almost absent (4,2%) (Fig. 8).

- Ex. 1: "The scientists modified fruits and vegetables in order to grow sooner than the natural ones and to be more nutritious and delicious. The label of GMF is a triangle with four circles inside, but, we rarely see it on the products…"
- Ex. 2.: "I think that GMF is not so good for our organism, because they cause various diseases."

The lack of personal interest and of engagement in the issue was observed by the limited use of argumentative markers of claim (50%) and of modality (8,3%) in text A (Figure 6). Even the rare and incidental use of argumentative
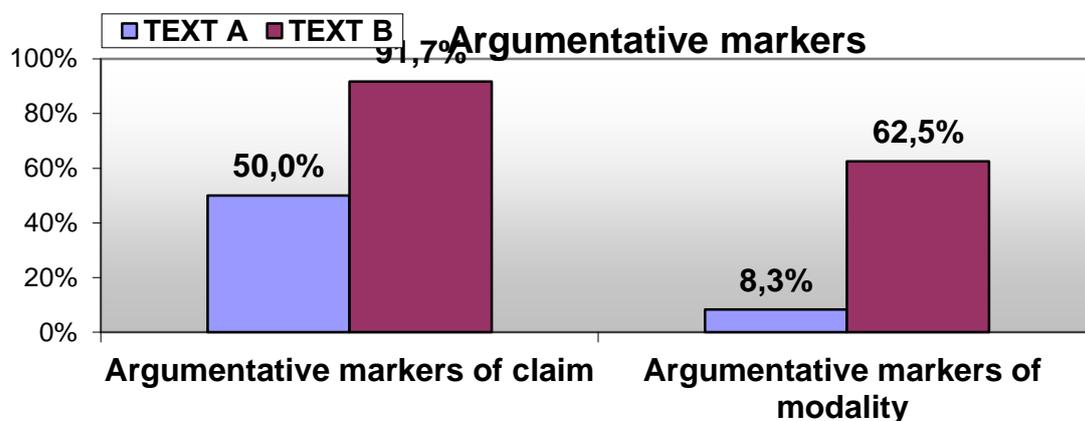

Figure 6 : Argumentative markers (Text A vs. Text B)

Markers of modality weakened the 'soundness' of the offered argumentation, since their 'value' indicated a possibility or an uncertainty of the writer about the truth of the supported position (*maybe, possibly...* etc.).

- "I believe that GMF is, possibly, harmful to our health, since they change the cells of the fruits or of the animals we eat. For example, they may put cells of lemon in a banana..." (Mary).

On the contrary, the change of activities during the intervention, had an important impact on every component of the rhombus as shown by the second written text (Text B). The final configuration of GMF continued to be negative.
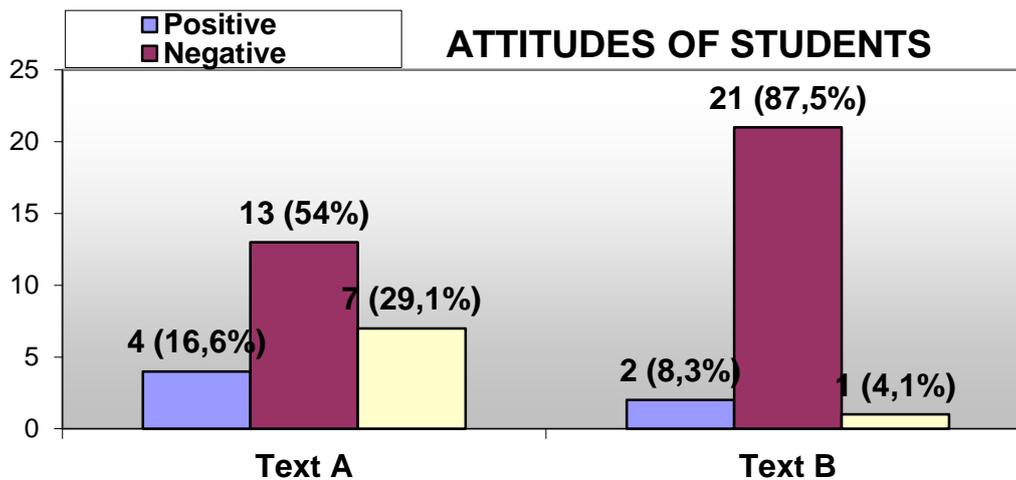
Figure 7: Attitudes of students (Text A vs. Text B)

Twenty one students (87,5%) stated their opposition to the use of GMF, two students (8,3%) expressed their adherence to it, while one student (4,1%) remained neutral (Fig.7). But, what is most important is that the students found the linguistic 'tools' which made them: a) support their position in a more authoritative way and b) construct their individual and social identity,
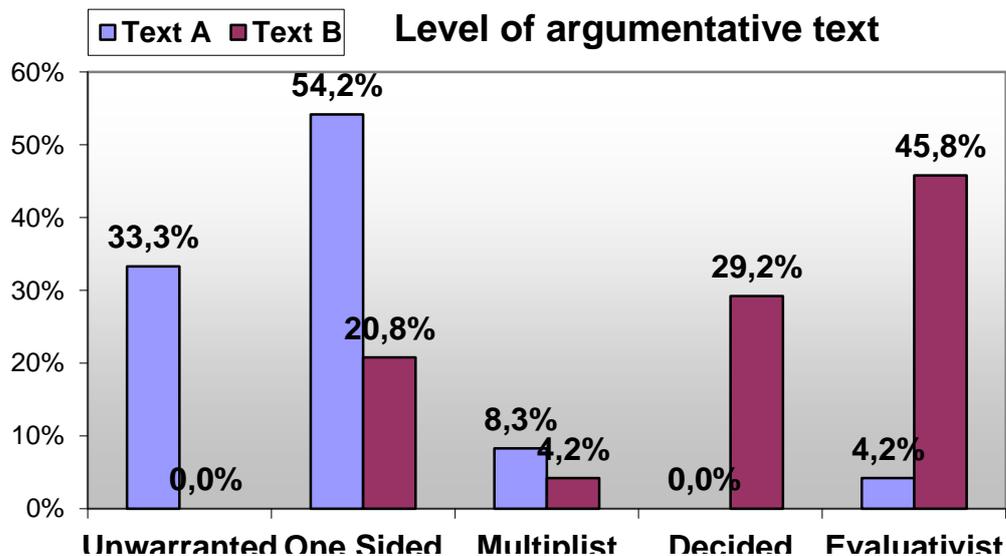
Figure 8: Level of argumentative text (Text A vs. Text B)

through the act of writing. First, an improvement of the form of the produced texts towards higher levels of argumentation was observed (Figure 8).

No unwarranted texts were produced and the number of the one-sided texts decreased to five students (20,8%). Seven students (29,2%) managed to produce decided texts through the presentation of a bilateral way of thinking and arguing, while eleven students (45,8%) achieved an evaluativist form of argumentation by 'weighing' the pros- and cons of GMF in order to adopt their final stand-point, using their 'logos', 'pathos' and 'ethos'. We present an example of an argument relative to the notion of safety vs. risk:

- "On one hand, animal testing shows that the use of GMF made the animals live more. On the other hand, their use provoked dangerous side-effects as toxins on the liver and the kidneys. I am afraid to risk my health since the researches are ambiguous. That's why I am against GMF and I advise all the fellow men to do the same." (Zenia)

The use of argumentative markers in the final texts increased significantly and highlighted a more personal and active commitment towards the issue (Figure 6). Twenty two students (91,7%) used argumentative markers of claim (*I believe that..., according to my opinion..., for me... etc.*) in order to express their personal opinion upon the issue. Fifteen students (62,5%) used argumentative markers of modality. What is important to notice is not only the increase of the percentage but, mainly, the change of the 'value' of the markers (*should..., shouldn't..., must..., mustn't...*) that revealed a greater certainty of the students about their standpoints.

Also, the use of argumentative markers of claims in Text B was accompanied by an increased use of linguistic units that revealed the adhesion of the students to a social group (70,8%). The social groups of citizens and of consumers or both of them at the same time (*as consumer, as citizen..., as a consumer and citizen...*) seemed to express better, in this context, their personal interests, values and beliefs. Students didn't omit to connect their interests to the practices of activist organizations or to diversify them from the interests of different social groups (such as the industries) and to propose possible forms of action with a universal dimension:

- "The big companies are afraid only of one thing: the informed citizens who protect their rights. If GMF was as safe as they want to present it, then why do they hide the identity of GM products and they don't write it down on their packaging?"
- "Personally, as a consumer, I can't believe that the majority of the Greek milk industries have cheated us and haven't respected our rights..."

Sometimes the individual identity was absorbed by a collective one expressed by the use of the plural number and the use of the personal pronoun 'we' in order to declare moral doubts:

- "As citizens of a democracy we demand to know what we are eating...".
- "Because, when we play dangerous games with mother-nature, then we are lost from the very beginning. Her gifts are more than enough for all of us and we don't need anything more than the perfection of nature...".

Moreover, in some cases under the social identity of the consumer /citizen students produced arguments in favor of biological cultivations converting the logic of planting GM crops and relating the problem of buying GM animal feed with the economic crisis of Greece: that is with the social context within which they live:

- Since in Greece we have so many fields, why don't we cultivate forage as chickpeas or peas that enrich the soil and may offer so many jobs?... In our economic situation such an industry would bring development to the country and we would have more possibilities to overpass the crisis...".

The issue of price and its connection to the Greek economic crisis was, also, a part of the argumentation of the supporters of GMF:

- "As a consumer, I support the use of GMF because they are rich in vitamins and they may be cheaper than natural products and, as we all know, we are going through an economic crisis...".

Also, it's worth mentioning that in Text B fourteen students (58,3%) used, at least once, linguistic units which permitted the expression of their 'auto-biographical' discursive self through the writing of examples, personal experiences, personal testimonies, sentiments etc.. Such discursive constructions were totally absent in the first text and their presence in the post-test helped students to extend their arguments, to give a more personal character to the produced texts and to warrant better their argumentation.

- "My sister is allergic to various foods. How can I be sure that genetic modification has nothing to do with it, since several researches have shown that GMF provoke allergies?"

Some students admitted in their texts that the program led them to the formation of their conclusion, to higher self-understanding and personal investment offering to learning an experiential character.

- "After a long period of involvement in GM products I have, now, an experience and an opinion on them. My standpoint is negative and I drew my conclusion based on the information and the sources which I saw and heard...".

4. Conclusions

The statistical results showed that the praxis intervention offered to students the opportunity to cultivate the isocratean qualities of *sophia* or *phronesis* (Depew, 2004:171) as future deliberative citizens and informed consumers. In other words, students developed their practical reasoning and made decisions about the use of GM products through rhetorical argumentation.

The educational practices of the second phase of the intervention created the necessary context for the production of a more active, dialogic, self-reflective and exploratory process of learning. The quantitative analysis confirmed the production of texts of higher argumentative lever; that is an improved form of argumentative literacy was achieved. Also, the rupture in habitual

practices seemed to have positive implications for the construction of the students individual and social identity. The increased use of argumentative markers and of linguistic patterns related to the autobiographical and of the social self of the students in the final texts was a sign of active and critical engagement with the examined issue. The intellectual, emotional, practical, moral entanglement of the students in GMF moved them away from prior habitual practices such as indifference and apathy towards social everyday phenomena. So, rhetorical pedagogy can be related to the acquisition of literacy as well to the civic engagement (Ackerman & Coogan, 2010) of young citizens, who will shape the future *polis* through an emergent discourse of care.

Furthermore, the student's argumentative discourse on GMF permitted the development of the skill of controversy, the capacity of evaluation and the questioning of the provided information. Therefore, rhetorical argumentation contributed to the expansion of their linguistic and metalinguistic, cognitive and metacognitive abilities. Student's knowledge about the language and the world, the self and society was enriched.

It could be supported that students reiterated the existent common sense towards GMF by recycling bias and stereotypes. Indeed, this possibility may be true up to a certain point. However, exploration of the self and of society, especially in this age, starts from the argumentation of common sense in order to criticize, refute or transform it later. As Billig (1991) notes "each repetition will be a creation, bringing the past towards its future" (p. 22). What really matters is the internalization of rhetorical argumentation with the implying actions of criticism, evaluation and choice of the best alternative solution in every situation. Citizenship and civic virtues stem from such inter--nalized processes and practices of individual thought and social existence.

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