

Argumentative Literacy and Rhetorical Citizenship: The Case of Genetically Modified Food in the Institutional Setting of a Greek Primary School

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Introduction

Ever since antiquity, rhetoric, as bipolar thinking and arguing upon every issue, has been interwoven with the instillation of virtues such as reflection, reasoning, awareness of the civil identity and of the sense of common good. In our era, characterized by rapid social and economic changes at both the *polis* and the *cosmopolis* levels, such an effort becomes essential for the formation of a more reasonable and humanistic social reality. Therefore, teaching rhetorical argumentation, even in the earliest stages of education, becomes one of the most powerful tools for the attainment of such a goal through the development of multi-level literacies and the concomitant construction of individual and social identities.

Theoretical framework

Rhetorical citizenship: from Isocrates to a critical and socio-cultural pedagogy of citizenship

Isocrates attributes to rhetoric as philosophy an essential role in the development of civic education. As a pioneer, he combined rhetoric – as good speaking (εὖ λέγειν/*eu legein*) – and literacy with the necessity of prudential action, of *praxis* (εὖ πράττειν/*eu pratein*). Within the Isocratean rhetorical *paideia*, literacy, the capacity of talking, reading and writing effectively, is accompanied by reflection (στοχάζεσθαι/*stokhazesthai*) and appropriate expression (πρέπον/*prepon*) of subjective opinions (δόξαν/*doxai*) upon current civic matters (καιρός/*kairos*). In particular, writing – an important feature of literacy – becomes a powerful “epistemic tool” that permits, first, the expression of *kairos* and *prepon* and, second, the formation of an ethos “within which both personal and public can work” (Walters 1993, p. 162). In this

way, Isocrates shaped the individual and social values and identities of his students in the democratic context of his era. By cultivating their eloquence, literacy and the aptitude to take political decisions, Isocrates sought to instill in his students the quality of practical wisdom, of *phronēsis*, and to lead them to “a collective inquiry into the good” (Poulakos 1997, pp. 4-5). For Papillon, “precept, practice and example” (1995, p. 151) were the cornerstones of Isocrates’ *technē* that combined rhetorical training and practice with civic education. In *Antidosis* (§ 184) Isocrates notes (1929, pp. 289, 291):

... the teachers of philosophy impart all the forms of discourse in which the mind expresses itself. Then, when they have made them familiar and thoroughly conversant with their lessons then they set them at exercises, habituate them to work, and require them to combine in practice the particular things which they have learned, in order that they may grasp them more firmly and bring their theories into closer touch with the occasions for applying them ...

Almost 2,500 years later, central notions of critical pedagogy are related to Isocratean principles of civic education for young citizens. For Freire (1985), Giroux (1988) and Welch (1999), the empowerment of citizenship is based on the interaction of a) the reflective challenge to political, socio-scientific and cultural data, b) consciousness raising, which instills social identity in individuals, and c) the improvement of current social data through the active learning and participation of citizen-agents. Active involvement in learning (Dewey 1933) is guaranteed by participatory, dialogic, situated activities that lead students to become informed participants and literate persons in a community (Shor 1999).

As regards the essential role of literacy in the acquisition of civic education (Knobel 1999), the modern socio-cultural approach (Christie 1990) confirms the primitive – although crucial – interrelation that Isocrates had pointed out during the middle of the 4th century B.C., when the passage from an oral to a literate culture characterized the socio-cultural reality of the era. According to UNESCO’s definition (2004, p. 13), “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.” The extension and plurality of the term literacy makes it a prerequisite to civic education. At the same time, active citizenship is 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 will be shown later in this paper.

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

Since the era of Isocrates' celebrated educational establishment of rhetoric in Athens, the school system, as a socio-cultural institution, offers a favorable "cultural environment" where students and teachers co-construct desirable civil virtues. In modern Greece, the *Single Interdisciplinary Curriculum* directs its gaze to a broader conception of citizenship following the demands created by the interdependence of events in different fields of the global social life (Keating et al. 2009). Therefore, besides the development of "Greek identity and consciousness," it aims at the intellectual, moral, social, economic, political and cultural development of young Greek citizens. The knowledge and understanding of universal and diachronic social values, critical evaluation of matters concerning liberty, equity, justice, human rights etc., the acquisition of necessary skills for free, responsible and active participation in the social, political and economic spheres are cited as necessary processes for attaining such goals. The whole effort takes a more systematic and organized form, once a week, in the 5th and 6th grade of primary school (11 and 12 year-olds) and the third class of High School (*Gymnasio*). Because of the limited time dedicated to formal civic education, its development is also attributed to an interdisciplinary approach ranging across the curriculum.

For example, in primary school the "semi-typical" lesson of *Flexible Zone* consists of an "umbrella" (Generalized Application ... 2005, p. 17715) under which various interdisciplinary programs are included. Emphasis is put on the development of critical thinking through collective forms of action and of dialectical communication (Ministry of National Education and Religion 2001, p. 10). The lesson aims at the students' cognitive development and the learning of values and pragmatic aspects of real life. Therefore, it offers an opportunity to develop "citizenship literacy" by examining socially contentious questions, such as the socio-scientific issue (SSI) of *Genetically Modified Food* (GMF). The interrelation of the genetic issue with argumentative and critical literacy facilitates the construction and expression of students' identities as members of a social group through purposeful literacy practices (Gee 1990).

In the case of genetics such an effort becomes necessary. The science

of genes, 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, the environment and, consequently, the global society. It demands the active engagement of 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 the linguistic expression of a socio-cultural practice, contributes to civic education. First, it represents a form of social action based on rhetorical, situated practices and activities (Miller 1984, p. 163). Second, it favors the emergence of critical thinking and of participatory skills due to its interactive nature (Schwarz 2009). Also, argumentation becomes a necessary tool for exploring linguistic possibilities. The students engaged in argumentation discover the necessary linguistic and meta-linguistic expressions (e.g. argumentative markers) that facilitate the representation of their identities (Golder 1993) and the negotiation of their standpoints (Tseronis 2011). Finally, argumentation is the key factor in supporting Isocrates' rhetorical education: "to explore the senses in which *logos* can articulate communal purposes, address situational demands, induce co-operation and secure wise deliberations" (Poulakos 1986, p. 307).

In sum, rhetorical engagement in the global issue of GMF creates a parallel activation of multi-level literacies, capable of conducting students to "the expansion of [their] personal and social identity" (Intzidis and Karantzola 2008, p. 8). As will be obvious, the idea of the construction of a literate, social identity informs the present case study. At the same time, the paper examines whether the Isocratean ideal of *logōn paideia*, education in argumentative discourse (in oral and written form), may still lead modern students to "wisdom and involvement in their culture" in order to benefit the *polis* as well as themselves (Blair 1992, p. 4).

About the study

Purpose

The purpose of the study was the improvement of argumentative writing and the production of higher level argumentative texts through which students might express their opinions about the use of GMF.

Materials and methods

Theory and methodology

The study describes an experiment with 24 twelve-year-old students, 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 background. The intervention was carried out for a total of forty-four class hours.

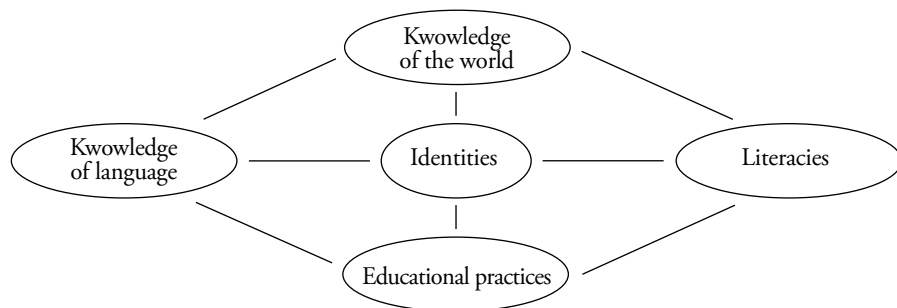
Our program aimed at finding an appropriate method for the construction of a literate civic identity. To the social constructionist approach, the shape of an identity stems from the community in which we belong as individuals. Writing, as an “act of identity” (Ivanič 1998, p. 32) is influenced by the applied practices and interactions of the community in which it is generated. Therefore, the destabilization of pre-existent educational practices or *habitus* and of crystallized ways of thinking and acting, and the enhancement of a more reflexive monitoring of texts, of classroom practices, of the self and of the society, may lead to the genesis of conscious, literate and active citizens. As Vygotsky notes (1981, p. 157), both social life and argumentation determine the higher intellectual capacities and possibilities of each individual.

Theoretical and methodological models that informed our intervention were:

a) *The rhombus model of education* (Fig.1). It represents the teaching of language as macro-genre. According to it, a bilateral relation may be shown to obtain between the promotion of literacy and the construction of identities of the participants-agents (Koutsogiannis and Alexiou 2012, p. 71). This relation is developed in a more complex web through the interdependence of all its factors such as: 1) *knowledge about the world* (values, attitudes etc.), 2) *knowledge about language* (meta-language), 3) *teaching practices*, 4) the intervention of *literacies* and 5) *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 of *civic virtues*, integration into a certain *community* (classroom) and access to various economic, cultural and political *resources* (school) (Turner 1997).

Other resources were: b) *The theory of social identity*: for Tajfel and Turner (2004) the formation of social identities depends on the meanings that individuals attribute to themselves as members of a particular social category and c) *the sociological analysis of emotions* (Stets and Turner 2008). According to it, there is a recursive and transformative interaction between,

FIGURE 1 THE RHOMBUS OF EDUCATION



on the one hand, emotions and cognitive representations of the self and of features of the social reality and, on the other, with the social structure and culture which influence the expression of salient identities (Stets 2007).

The corpus of data consisted of: a) transcripts from audiotaped activities in the classroom and b) students' individual pre-test texts (Text A) and post-test texts (Text B) in the form of an argumentative opinion essay. The results of the students' oral activities and written texts were analyzed in qualitative and quantitative terms (triangulation of data). The qualitative analysis was based on the dialectical-relational approach of Critical Discourse Analysis. More specifically, Fairclough's three-dimensional model (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). The category system was identified as reliable based on 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 ($p < 0.000$) were obtained for the observations regarding the level of the *decided* and *evaluativist* argumentative texts written after the intervention (Text B; see 4.2). Therefore, there was evidence that the observation system used by the researcher was valid.

Materials and treatment

The treatment was realized in two phases:

Phase I: The first phase included typical strategies such as: 1) the choice of the theme (1 hour): the issue of Genetics was included in the official man-

ual of *Flexible Zone* and was freely chosen by the students among other issues for further research; 2) reading and analysis of textbook material (1 hour); 3) gathering and presentation of data (5 hours): students chose, and read in class, texts (journalistic, web-texts) and presented photos relative to the issue. A short discussion about GMF followed; 4) writing an argumentative text (1 hour): students developed their arguments for or against GMF (pre-test). The theme was: "What is your opinion of the use of GMF in your daily life?" During this phase, the oral interactions among teacher and students were limited to typical forms of questions and answers. The above habitual educational practices aimed at students' acquisition of a basic knowledge about GMF and their familiarization with the necessary vocabulary relating to the issue.

Phase II: The second phase included cognitive and social strategies of learning such as:

1) use of audiovisual media (1 hour): a short video from Greek educational television (<http://www.edutv.gr>) was presented in order to increase students' knowledge about GMF. Students were informed equally about the possible positive and negative consequences of genetically modified products;

2) expert opinions (2 hours): two experts, an industrial chemist and a member of the Greek World Wildlife Fund (WWF), visited the classroom in order to further cultivate the genetic literacy of the students. A short conversation about the role of bio-technology in foods followed;

3) drawing ideas (2 hours): after these visits, students were asked by the teacher to draw a picture illustrating the possible positive and negative effects of GMF. As evident in Figures 2 and 3, the visual antithesis among the drawings provoked a further classroom discussion of the controversial character of GMF in real life;

4) posing the problem (2 hours): students expressed and justified their initial 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.) in order to increase their knowledge about argumentation as a linguistic activity;

6) modeling (1 hour): a modeling of an argumentative text as a train (Egglezou 2010) was used, aimed at facilitating recall of its structure (thesis/reason(s)/counterargument(s)/rebuttal(s)/conclusion/evidence);

7) reading, listening and analysis of model texts (5 hours): five texts about GMF, brought to the classroom by the students, were re-read and broken down into their component parts by the teacher in cooperation with the students, in order to help them analyze the argumentation provided for or against GMF;

FIGURE 2 THE BUTTERFLY-APPLE

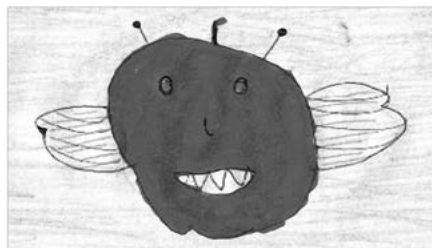


FIGURE 3 NO TO GMF



8) oral interactions between students (10 hours): students engaged in various oral interactions such as a) *linguistic games*: during the game “Tell the opposite” each student stated his/her opinion and asked the next classmate to state the opposite idea about GMF (1 hour); b) *role-playing debates*: these debates created the necessary context for the development of the students’ arguments. For example, students acting as consumers asked the greengrocer of the ‘laiki’ market (a typical Greek farmers’ market) why the tomatoes were so big, red and round or, as commercial agents of Monsanto, tried to persuade producers to buy GM tomato seeds (2 hours); c) the *Six Thinking Hats* of De Bono (1985; 3 hours). The students, as consumers, producers, citizens and scientists, worked collaboratively and developed their parallel argumentation considering the issue of GMF under multiple perspectives; d) *brainstorming*: students were divided into six groups of four and tried to find arguments for and against the use of GMF for (i) human health, (ii) the environment, and iii) society (1 hour); e) *Parliamentary debates* (3 hours): students exchanged arguments for and against GMF. All the above practices permitted the students’ familiarization with various roles, allowed them to deliberate and/or arrive at justified opinions, while they shared common experiences and interacted pleasantly during the learning process;

9) *emotional arousal* (2 hours): students expressed their feelings and thoughts about a real case. Four of the biggest Greek dairy companies were accused by Greenpeace of using GM animal feed at a percentage of 90 %, with the result that the milk tested positive for GM substances;

10) *dyadic collaborative writing* (2 hours): students, in pairs, wrote a letter to the dairy companies, complaining, as responsible citizens, about the use of 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 (post-test) stating their arguments on GMF.

Findings

Qualitative analysis of the oral activities

The aforementioned oral activities aimed at changing formal educational practices as well as students' knowledge about the world and the language. The game *The chain of explanations* provoked their skepticism about personal thoughts and attitudes and established the basis for their further deliberation on GMF. For example:

(Antonis): "In the beginning I thought that it would be fun ... eh... 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"* familiarized students with the expression of counterarguments related to the use of GMF and to the development of the art of controversy. The students exchanged different ideas on the issue of GMF:

"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, as an introduction to debate, made students assume various roles and produce arguments from those perspectives. At the same time this activity helped them develop the necessary civic qualities of

empathy and *tolerance*, that is, the ability to recognize, understand and accept another person's perceptions:

(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."

(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 naturally selected intersections. You will have secure results and, trust me, your output will increase. So you will earn more money."

By wearing the *Six Thinking Hats* of De Bono (1985) students extended their thinking skills. Their argumentation varied according to the students' identification with different social groups (e.g. consumers, producers, citizens and scientists). 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. The scientists will continue the research in order to prove that genetic modification does no harm to human beings. We want consumers to trust our products and choose them of their own free will because they prefer them."

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

(Evangelos): "I and my team, we are against the use of GMF. The opponent team said that GMF has 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 in 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 tested positive for GM substances acted in a catalytic way on the students' judgments. Intense feelings such as rage, anger, sorrow, insecurity, anxiety arose in students, proving that "increasing our capacity for emotion enhances our ability to reason" (Nelson 2005, p.8) and illustrating 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 and the informative role of television, and as consumers they demanded official information about what they ate, asking for GMF labels in supermarkets, and criticizing, implicitly, current policies or failures to act on the part of the state or consumers:

(Dimitris): "I don't feel safe because I don't 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."

Statistical analysis of the written texts

The evaluation criteria for students' pre-test texts (Text A) and post-test texts (Text B) 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) *unwarranted* texts (1 point), b) *one-sided* texts (2 points), c) *multiplist* texts where despite the appearance of oppositional arguments no explicit conclusion was drawn (3 points), d) *decided* texts where the choice between the contrasting arguments was not grounded (4 points) and e) *evaluativist* texts where the adoption of the proposed argumentation was based on a refutation of the opposing argument(s) (5 points). 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 modality). A rating scale from 0-2 was created according to the following norm: a) no use of argumentative

markers of claim or modality: 0 points, b) use of an argumentative marker of claim or modality at least once in the text: one point, c) use of both argumentative markers at least once in the text: two points. Lower average means of the scale represented limited use of argumentative markers in the text.

Two statistical tests were used: a) the McNemar non-parametric test, for measuring the significance of the percentage of the matched pre/post test results. In our case the test was applied in order to determine whether the intervention had an effect on argumentative writing according to the above criteria at a significant level; b) the Wilcoxon non-parametric test was used in order to detect the existence of differences at a significant level 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). After the intervention a significant difference was observed in the percentage of the produced texts of the *unwarranted* level (Text A 33 % vs. Text B 0) ($p = 0.008$), of the *decided* level (Text A 0 vs. Text B 29.2 %) ($p = 0.016$), and of the *evaluativist* level (Text A 4.2 % vs. Text B 45.8 %) ($p = 0.002$), while no significance was noticed in the texts of *one-sided* level (Text A 54.2% vs. Text B 20.8 %), and of the *multiplist* level (Text A 8.2 % vs. Text B 4.1 %).

According to the Wilcoxon signed rank test the average mean $M = 1.88$ ($SD = \pm 0.9$) of the argumentative level of the pre-test (Text A) increased in the post-test (Text B) ($M = 4.00$, $SD = \pm 1.18$). The analysis showed a significant difference in the mean argumentative level between Texts A and B ($p = 0.000$). Positive differences in Figure 4 indicate that the students produced texts at a higher argumentative level after the activities of the second phase (Text B), while the negative difference expresses the final absence of “unwarranted” texts.

For the second criterion a significant increase in the percentage of argumentative markers was noticed. 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

FIGURE 4 POSITIVE AND NEGATIVE DIFFERENCES IN THE ARGUMENTATIVE LEVEL OF THE PRODUCED TEXTS

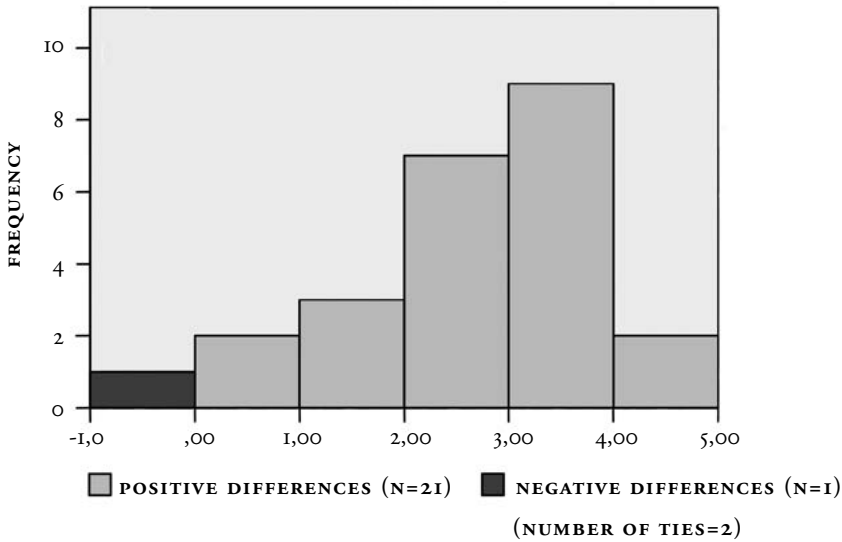
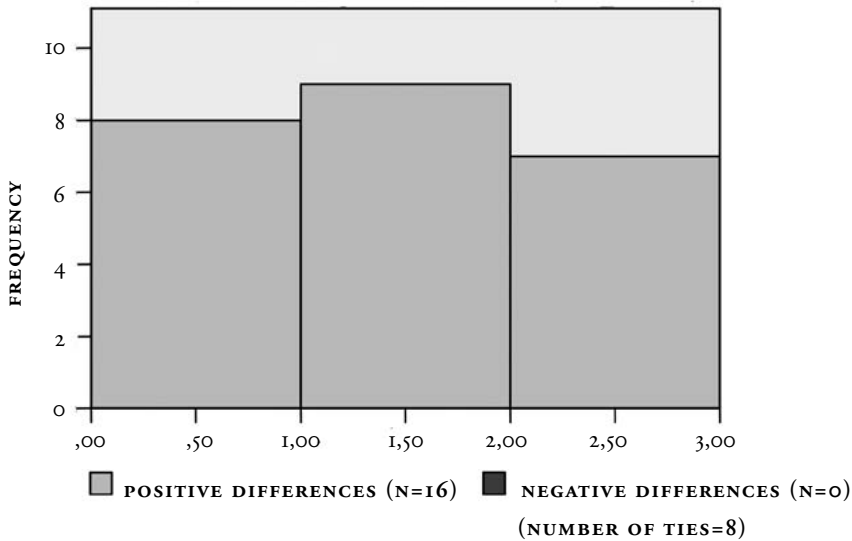


FIGURE 5 POSITIVE DIFFERENCES IN THE USE OF ARGUMENTATIVE MARKERS



a significant difference in the use of argumentative markers of claim ($p = 0.000$). A significant difference relative to the use of argumentative markers of modality ($p = 0.002$) was also noticed. The percentage of the students that used argumentative modality markers increased between Texts 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 ($p = 0.000$) from $M = 0.58$ in Text A ($SD = \pm 0.654$) to $M = 1.54$ in Text B ($SD = \pm 0.658$). The positive differences shown in Figure 5 highlight the increased use of argumentative markers after the activities of the second phase.

Triangulation of data: further analysis of the texts

The free written argumentative text (Text A) reflected a generalized negative reception and attitude (Gaskell 1999) towards GMF, which represents a broader public European and, especially, Greek perception of the issue (Marouda-Chatjoulis et al. 1998). Thirteen students (54 %) stated their opposition to GMF, four students (16.6 %) kept a positive attitude towards it, while seven students (29 %) were neutral on the use of GMF (Fig. 7).

Despite the results, the qualitative analysis of the produced texts showed that the generalized rejection of GMF wasn't supported by personal and conscious "discursive constructions" (Lankshear and Knobel 1997, p. 95). The students seemed to have difficulties expressing their "discursive self" as writers. Linguistic units expressing personal values, beliefs or experiences, that is, elements of individual identity, were lacking. Correspondingly, only three students used linguistic patterns identifying themselves with some social group. In other words, students had a superficial approach to the whole issue during the first phase owing to embedded, habitual practices of communicating, reading and writing.

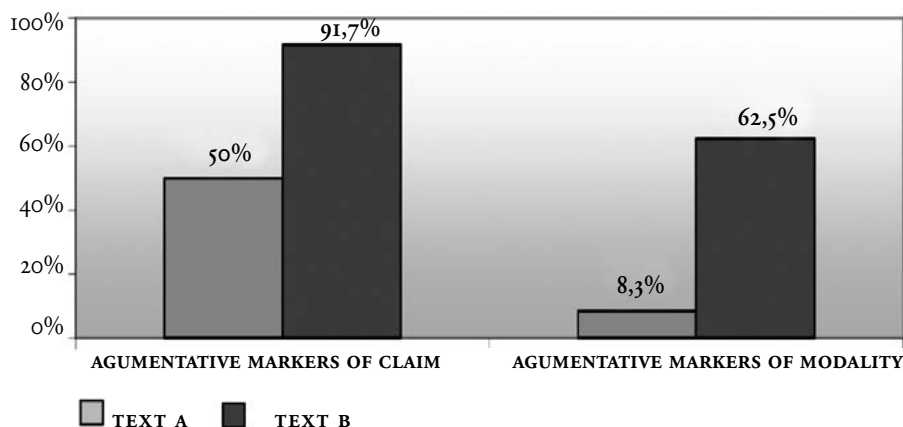
Most of the texts A were either unwarranted (33.3 %) or one-sided (54.2 %). Either a jumble of information about GMF was given, or the arguments were clichés, mechanical reproductions of stereotypical ideas about human health. The negotiation and critical evaluation of opposite ideas were lacking (4.2 %) (Fig. 8).

"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."

The lack of personal interest and engagement in the issue was shown by the limited use of argumentative markers of claim (50 %) and of modality (8.3%) in text A (Fig. 6). Even the incidental use of modality markers weakened the argumentation presented, since their ‘value’ indicated either a possibility or an uncertainty of the writer about the position supported (*maybe, possibly, etc.*).

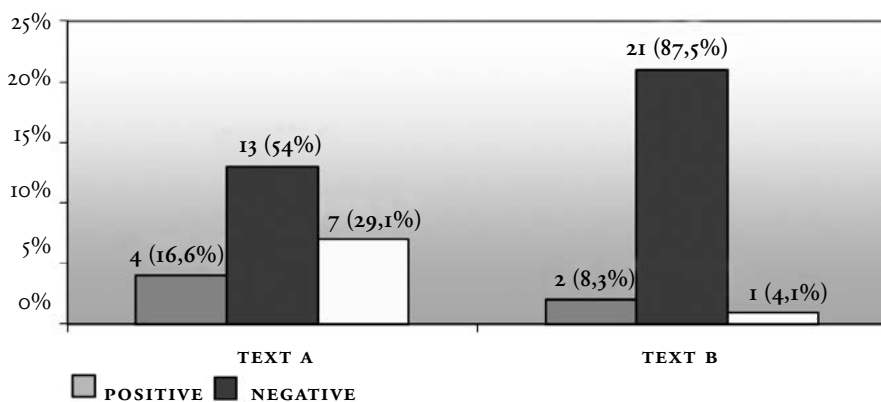
“I believe that GMF is, possibly, harmful to our health, since they change the cells of the fruits or of the animals we eat. For example, they may put cells of lemon in a banana” (Mary).

FIGURE 6 ARGUMENTATIVE MARKERS (TEXT A VS. TEXT B)



On the other hand, the activities during the second phase had a positive impact on the writing of Text B. The final attitude to GMF continued to be negative in most of the texts. Twenty-one students (87.5 %) were opposed to the use of GMF, two students (8.3 %) supported it, while one student (4.1 %) remained neutral (Fig.7). But what is most important is that the students discovered the linguistic “tools” which helped them a) support their position in a more authoritative way and b) construct their identities through writing. The form of the texts was improved, achieving higher levels of argumentation (Figure 8).

FIGURE 7 ATTITUDES OF STUDENTS (TEXT A VS. TEXT B)



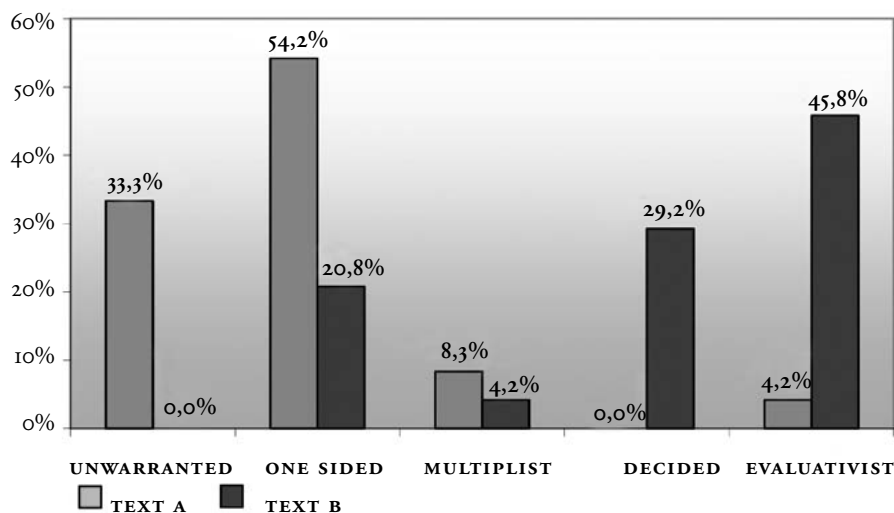
No unwarranted texts were produced, and the number of one-sided texts decreased to five (20.8 %). Seven students (29.2 %) managed to produce decided texts through the presentation of bilateral thinking and arguing, while eleven students (45.8 %) achieved the evaluativist form of argumentation by weighing the pros and cons of GMF in order to adopt their final standpoint, using ‘logos’, ‘pathos’ and ‘ethos.’ We present an example of an argument relative to the notion of safety vs. risk:

“On the one hand, animal testing shows that the use of GMF made the animals live longer. 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 my fellow men to be so.”
(Zenia)

In the final texts (B), the use of argumentative markers increased significantly and highlighted an active commitment on the issue (Fig. 6). Twenty-two students (91.7 %) used markers of claim (*I believe that...*, *according to my opinion...etc.*) in order to express their personal opinions. Fifteen students (62.5 %) used modality markers. What is important to notice is not only the increase in the percentage but, mainly, their strong value (*should...*, *shouldn’t...* etc.), which revealed a greater certainty about the students’ standpoints.

Also, the use of argumentative markers in Text B was accompanied by an increased use of linguistic units that revealed the students’ adherence to a certain social group (70.8 %). Mostly, the students were identified with the

FIGURE 8 LEVEL OF ARGUMENTATIVE TEXT (TEXT A VS. TEXT B)



social groups of citizens and of consumers or both of them at the same time (*as consumer..., as citizen..., as a consumer and citizen...*). Besides that, the students either connected their interests to the practices of activist organizations or set themselves apart from the interests of other social groups – such as the industries. Also, the students proposed courses of action against GMF:

“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 on their packages?”

Sometimes the students’ individual identity was absorbed by a collective one, as shown by the use of the plural personal pronoun *we*:

“As citizens of a democracy we demand to know what we are eating...”.

“Because, when we play dangerous games with mother nature, 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 representing the social identity of the consumer/citizen the students produced arguments in favor of organic farming, converting

the logic of GM crops and relating the problem of GM animal feed to the economic crisis of Greece, that is, to the social context in which they lived:

“Since in Greece we have so many fields, why don’t we cultivate crops such as chickpeas or peas that enrich the soil and may offer so many jobs?... In our economic situation such farming would bring development to the country and we would have a better chance of coming through the crisis ...”.

The issue of price and its connection to the Greek economic crisis was also 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 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, testimonies, sentiments etc. Such discursive constructions were totally lacking in the first text. Their use in the post-test (B) helped the students to extend their argumentation, to formulate effective warrants and to give a more personal style to the texts produced.

“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 declared that their participation in the activities of the program led them to form their final opinion, to reach a higher level of self-understanding and to gain a deeper knowledge of the socio-scientific issue of GMF.

“After a long period of involvement in GM products I now have 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...”.

Conclusions

To conclude, the statistical results of the research showed that *logos* was a precious tool that allowed students to get in touch with reality, to promote their knowledge, to deliberate on a modern socio-scientific issue and to arrive at justified beliefs. The students succeeded in cultivating the Isocratean quality of *sophia* or *phronesis* (Depew 2004, p. 171), as future deliberating citizens and consumers. In other words, they developed their practical reasoning and made decisions about the use of GM products through rhetorical argumentation. So, the belief of Isocrates is still credible: that the unifying strength of the language embedded in rhetorical pedagogy helps the acquisition of literacy as well of civic engagement in young citizens. Today, more than ever, it is necessary to train the *politai* in a socially responsible rhetoric, affording opportunities for social change and for shaping the future *polis* through an emergent discourse of care (Ackerman and Coogan 2010).

In particular, our research revealed that the educational practices of the second phase of the intervention created a suitable context for a more active, dialogic, self-reflective and exploratory process of learning. The students' argumentative discourse on GMF permitted them to develop the skill of controversy and the capacity of evaluating and questioning the information provided. Rhetorical argumentation contributed to the expansion of their linguistic and metalinguistic, cognitive and metacognitive abilities. Students' knowledge about the language and the world, the self and society was broadened.

Apart from the students' oral argumentative activities, the writing facilitated articulation of their thoughts in written words in an orderly and disciplined way. The statistical analysis confirmed that written texts at a higher argumentative level were produced; that is, an improved form of argumentative literacy was achieved. Also, the departure from habitual teaching practices seemed to have positive implications for the construction of the students' individual and social identities. In the final texts, the increased use of argumentative markers and of various linguistic patterns relative to the auto-biographical and social selves of the students was a sign of active engagement with the issue. Their intellectual, emotional, practical and moral involvement in the issue of GMF moved them away from prior habitual attitudes such as indifference and apathy towards everyday social phenomena.

It might be objected that students reiterated commonsense notions about GMF, recycling bias and stereotypes. Indeed, this may be true up to a certain point. However, exploration of the self and of society, especially at

this age, starts from commonsense argumentation in order to criticize, refute or transform it later. As Billig notes, “each repetition will be a creation, bringing the past towards its future” (1991, p. 22). What really matters is the internalization of rhetorical argumentation, implying criticism, evaluation and choice of the best alternative in every situation. Citizenship and civic virtues stem from such internalized processes and practices of individual thought and social existence.

References

- Ackerman, J. and D. Coogan. (2010). *The Public Work of Rhetoric: Citizen-Scholars and Civic Engagement*. Columbia: University of South Carolina Press.
- Billig, M. (1991). *Ideology and Opinions: Studies in Rhetorical Psychology*. London: Sage.
- Blair, K.L. (1992). Isocratean Discourse Theory and Neo-Sophistic Pedagogy: Implications for the Composition Classroom. (Paper presented at the annual meeting of the Conference on College Composition and Communication, Cincinnati, OH, March 19-21, 1992.)
- Christie, F. (1990). *Literacy for a Changing World*. Melbourne: Australian Council for Educational Research.
- Cohen, J. (1960). “A Coefficient of Agreement for Nominal Scales.” *Educational and Psychological Measurement* 20, 37-46.
- De Bono, Edward. (1985). *Six Thinking Hats: An Essential Approach to Business Management*. Boston: Little, Brown and Company.
- Depew, D. (2004). “The Inscription of Isocrates into Aristotle’s Practical Philosophy.” In T. Poulakos and D. Depew (Eds.), *Isocrates and Civic Education* (pp. 157-185). Austin: University of Texas Press.
- Dewey, J. (1933). *How we Think*. Boston: Heath.
- Egglezou, F. (2010). *Argumentative Writing: Teaching of Language Arts in Primary School*. PhD diss., University of Ioannina.
- Fairclough, N. (1995). *Critical Discourse Analysis: The Critical Study of Language*. London: Longman.
- Freire, P. (1985). *The Politics of Education: Culture, Power and Liberation*. Westport, CT: Bergin and Garvey Publishers.
- Gaskell, G., M.W. Bauer, J. Durant and N.C. Allum. (1999). Worlds Apart? The Reception of Genetically Modified Foods in Europe and the U.S. *Science Magazine* 28, 384-387.
- Gee, J.P. (1990). *Social Linguistics and Literacies: Ideology in Discourses*. London: The Falmer Press.
- Generalised Application of the Program of Flexible Zone to the Primary Education.

- (2005). In: *Journal of the Government of the Greek Republic*, Vol. 2, no. 1280 (13-9-2005): 17715-17726. Athens: The National Typography.
- Giroux, H. (1988). *Teachers as Intellectuals: Towards a Critical Pedagogy of Learning*. Westport, CT: Bergin and Garvey Publishers.
- Golder, C. (1993). Framed Writing of Argumentative Monologues by Sixteen-and Seventeen-year-old Students. *Argumentation* 7, 343-358.
- Intzidis, E. and E. Karantzola. (2008). Literacies for Active Citizenship. In C. Medel-Anonuevo (Ed.), *Literacy and the Promotion of Citizenship: Discourses and Effective* (pp. 7-12). Hamburg: Unesco Institute for Lifelong Learning.
- Isocrates. (1929). Antidosis. In *Isocrates* (Vol. II). Translated by George Norlin, pp. 181-367. London: William Heinemann Ltd.
- Ivanič, R. (1998). *Writing and Identity: The Discoursal Construction of Identity in Academic Writing*. Amsterdam: John Benjamins Publishing Company.
- Keating, A., D. Hinderliter Ortloff and S. Philippou. (2009). Citizenship Education Curricula: The Changes and Challenges Presented by Global and European Integration. *Journal of Curriculum Studies* 41, 145-158.
- Knobel, M. (1999). *Everyday Literacies: Students, Discourse and Social Practice*. New York: Peter Lang Publishing.
- Koutsogiannis, D. and M. Alexiou. (2012). *Study for the Design, Development and Application of Scenarios and Educational Activities for the Teaching of Greek Language to the Secondary Education*. Thessaloniki: Center of Greek Language, Ministry of Education, Lifelong Learning and Religion.
- Lankshear, C. and M. Knobel. (1997). Critical Literacy and Active Citizenship. In S. Muspratt, A. Luke and P. Freebody (Eds.), *Constructioning Critical Literacies: Teaching and Learning Textual Practice* (pp. 95-124). New Jersey: Hampton Press.
- Mani-Ikan, E. (2000). Writing as a Tool for Learning Biology: A Model for Learning Biology through Writing Skills. PhD diss., Hebrew University of Jerusalem.
- Marouda-Chatjoulis, A., A. Stathopoulou and G. Sakellaris. (1998). Greece. In J. Durant, M. Bauer and G. Gaskell (Eds.), *Biotechnology in the Public Sphere: A European Source Book* (pp. 77-88). London: The Board of Trustees of the Science Museum.
- Mercer, N. (2009). Developing Argumentation: Lessons Learned in the Primary School. In N. Muller Mirza and A.N. Perret-Clermont (Eds.), *Argumentation and Education: Theoretical Foundations and Practices* (pp. 177-194). Berlin: Springer.
- Miller, C. (1984). Genre as Social Action. *Quarterly Journal of Speech* 70, 151-167.
- Ministry of National Education and Religion. (2001). *Guide for the Application of Flexible Zone: Teacher's Guide*. Athens: Pedagogical Institute.
- Nelson, J. (2005). Emotions as Reasons in Public Arguments. *Poroi* 4, 1-26.

- Papillion, T. (1995). Isocrates' Techne and Rhetorical Pedagogy. *Rhetoric Society Quarterly* 25, 149-163.
- Poulakos, T. (1986). Gorgias' and Isocrates' Use of the Encomium. *Southern Speech Communication Journal* 51, 300-307.
- Poulakos, T. (1997). *Speaking for the Polis: Isocrates' Rhetorical Education*. South Carolina: University of South Carolina Press.
- Schwarz, B. (2009). Argumentation and Learning. In N. Muller Mirza and A.N. Perret-Clermont (Eds.), *Argumentation and Education: Theoretical Foundations and Practices* (pp. 91-126). Berlin: Springer.
- Shor, I. (1999). *Empowering Education: Critical Teaching for Social Thought*. Chicago: University of Chicago Press.
- Stets, J.E. (2007). Identity Theory and Emotion. In J. Stets and Jonathan Turner (Eds.), *Handbook of the Sociology of Emotions* (pp. 203-223). Berlin: Springer.
- Stets, J.E. and J.E. Turner. (2008). The Sociology of Emotions. In M. Lewis, J. Haviland-Jones, L.F. Barrett (Eds.), *Handbook of Emotions* (pp. 32-46). New York: The Guilford Press.
- Tajfel, H. and J. Turner. (2004). The Social Identity Theory of Intergroup Behavior. In J. Jost and J. Sidanius (Eds.), *Political Psychology* (pp. 276-293). New York: Psychology Press.
- Tseronis, Assimakis (2011). From Connectives to Argumentative Markers: A Quest for Markers of Argumentative Moves and of Related Aspects of Argumentative Discourse. *Argumentation* 25, 427-447.
- Turner, B. (1997). Citizenship Studies: A General Theory. *Citizenship Studies* 1, 5-18.
- Unesco. (2004). *The Plurality of Literacy and its Implications for Policies and Programs*. Paris: United Nations Educational Scientific and Cultural Organization.
- Verma, G.K. and K. Mallick. (1999). *Researching Education: Perspectives and Techniques*. Philadelphia: The Falmer Press.
- Voelkl, K. and S. Gerber. (1999). *Using SPSS for Windows: Data Analysis and Graphics*. New York: Springer.
- Vygotsky, L. (1981). The Genesis of Higher-Order Mental Functions. In J. Wertsch (Ed.), *The Concept of Activity in Soviet Psychology* (pp. 144-188). New York: Sharpe.
- Walters, F. (1993). Isocrates and the Epistemic Return: Individual and Community in Classical and Modern Rhetoric. *Journal of Advanced Composition* 13, 155-172.
- Welch, K. (1999). *Electric Rhetoric: Classical Rhetoric, Oralism, and a New Literacy*. Cambridge, MA: MIT Press.
- Wodak, R. and M. Meyer. (2009). Critical Discourse Analysis: History, Agenda, Theory and Methodology. In R. Wodak and M. Meyer (Eds.), *Methods of Critical Discourse Analysis* (pp. 1-33). California: Sage.